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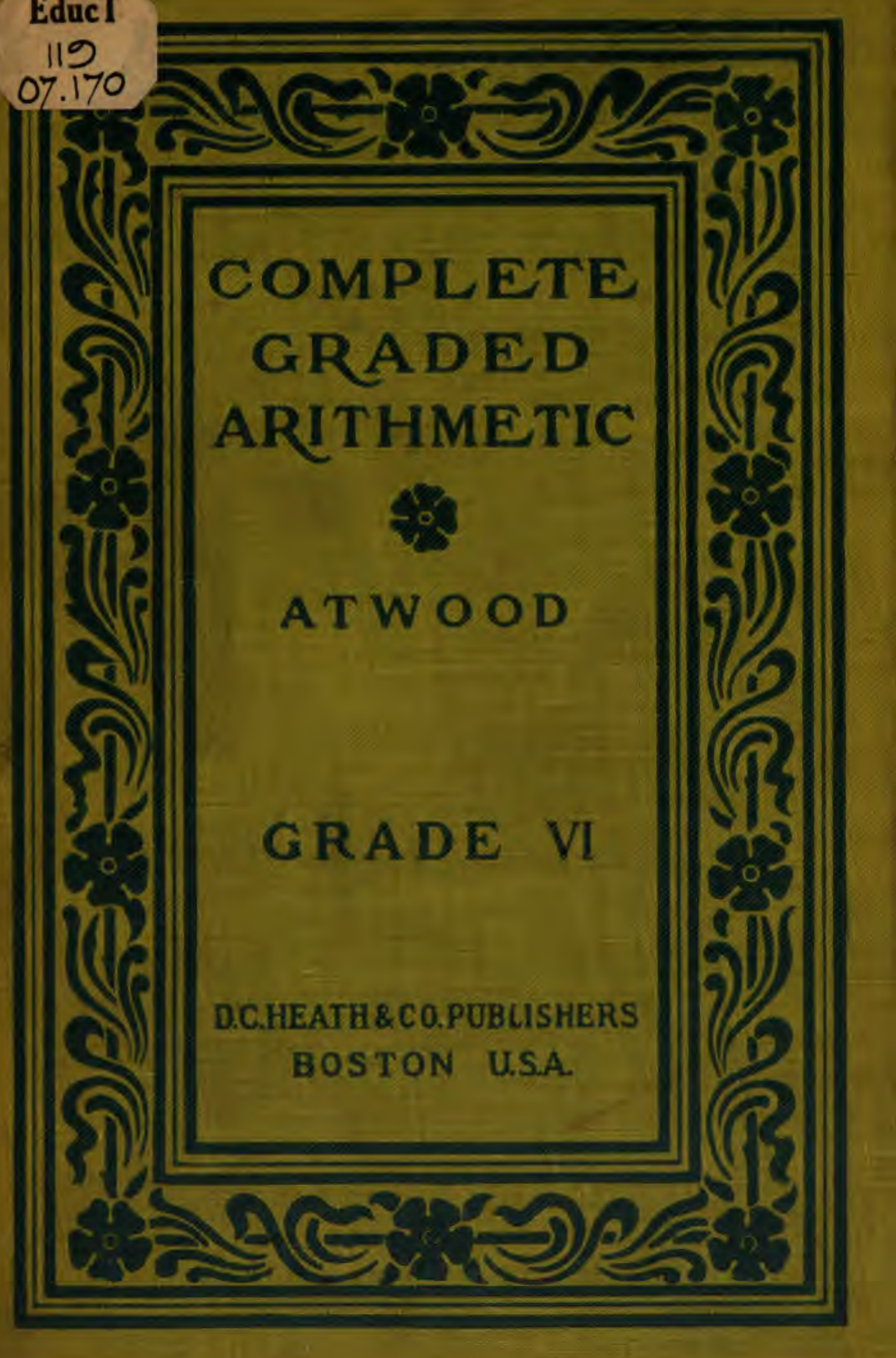

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COMPLETE
GRADED ARITHMETIC

SIXTH GRADE

BY

GEORGE E. ATWOOD

BOSTON, U.S.A.
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1907

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PREFACE

THIS book is similar in plan and arrangement to those of the series that precede it. It continues a review of the most important topics begun in preceding grades and gradually presents new topics. Throughout the book there is the same combination of oral and written work. The topics studied in the first books are not only reviewed, but further extended and applied. This is especially true of fractions and all work on surface and volume measurements. The new matter presented includes decimals, the completion of denominate numbers, and easy work in percentage.

The rational treatment of decimals will commend itself to teachers. Pupils' work in multiplication and division of decimals is generally mechanical and but little understood. In all examples in multiplication in which the multiplier is a decimal, pure or mixed, a certain number of decimal parts of a number is to be found. Children find seven eighths of a number by finding one eighth of it and multiplying that by seven. It seems rational to proceed in a similar manner in decimals. Pupils can understand division of decimals if they know they are finding how many times one number of decimal parts is contained in another number of like decimal parts. This is the method of division here presented.

A conviction prevails among teachers that too much time has been devoted to the study of denominate numbers. It will be observed that the work on this topic is considerably abridged by omitting several cases in reduction of denominate fractions and by reducing and simplifying the few types of work given. The exercises are limited to reduction ascending and descending, addition, subtraction, multiplication, division, and the reduction of denominate fractions and denominate decimals to lower units, and under each of these heads there are comparatively few examples.

Easy examples in percentage are introduced soon after decimals. These exercises are limited in the written lessons to finding a per cent of a number and finding a number when a per cent of it is known. Both types of examples are so closely related to what the pupils have already learned that they have no difficulty whatever in understanding them. This knowledge of percentage is then applied to a great variety of simple problems, oral and written.

In the preparation of this book the author has received valuable assistance from F. E. Spaulding, Supt. of Schools, Newton, Mass.; J. C. Lyford, Principal of Winslow Street School, Worcester, Mass.; Charles L. Van Cleve, Supt. of Schools, Mansfield, Ohio; and W. H. Baker, Instructor of Mathematics, State Normal School, San Jose, Cal., for which he desires to make grateful acknowledgment.

G. E. A.

COMPLETE GRADED ARITHMETIC

SIXTH GRADE

When anything is divided into tenths, hundredths, thousandths, ten-thousandths, hundred-thousandths, and so on, the parts are called *decimal parts.*

A **Decimal Fraction**, or Decimal, is one or more of the equal decimal parts of anything.

$$111 = 100 + 10 + 1$$

The first 1 at the right of 111 denotes 1; the second, 10; the third, 100. Each 1 therefore denotes 1 tenth of the value of the 1 next at the left. The same relation is used in expressing decimals. If we place a point, called the *decimal point*, after the first 1, a 1 immediately at the right of the decimal point denotes 1 *tenth;* the next 1, 1 tenth of 1 tenth, or 1 *hundredth;* the next 1, 1 tenth of 1 hundredth, or 1 *thousandth;* and so on. The figures at the right of the decimal point are called *decimal places.* We see therefore that the first decimal place expresses *tenths;* the second, *hundredths;* the third, *thousandths;* the fourth, *ten-thousandths;* and so on.

.8 denotes 8 tenths; .06, 6 hundredths; .28, 28 hundredths; .005, 5 thousandths; .045, 45 thousandths; .125, 125 thousandths; .0002, 2 ten-thousandths.

Read: .15 .108 .004 .0125 .00008 .02005

Read: .07 .025 .375 .2008 .00104 .00125

A **Mixed Decimal** is a whole number and a decimal written together.

Read *and* only at the decimal point.

Read: 4.6 17.005 208.065 600.06 8025.008

A **Complex Decimal** is a decimal with a common fraction written at its right.

Read: $.15\frac{2}{3}$ $.5\frac{1}{3}$ $.008\frac{5}{6}$ $.06\frac{1}{9}$ $.0009\frac{1}{7}$

To write decimals, it is only necessary to remember that one decimal place expresses tenths; two places, hundredths; three places, thousandths; four places, ten-thousandths; five places, hundred-thousandths; etc.

Express decimally: six hundredths; eighteen, and five tenths; thirty-five thousandths; sixty, and fifteen ten-thousandths; fourteen hundredths; forty-eight, and four thousandths; nineteen hundred-thousandths; six hundred eight thousandths; six hundred, and eight thousandths; four hundred, and four hundredths; one hundred four millionths; seventy-six thousand, and six millionths.

$\frac{7}{10} = \frac{70}{100}$ $.7 = .70$ $\frac{130}{1000} = \frac{13}{100}$ $.130 = .13$

PRINCIPLE. — *Annexing ciphers to a decimal does not change its value; and conversely, rejecting ciphers from the right of a decimal does not change its value.*

$.24 = \frac{24}{100} = \frac{6}{25}$ $.85 = \frac{85}{100} = \frac{17}{20}$ $.38 = \frac{38}{100} = \frac{19}{50}$

To reduce a decimal to a common fraction:

RULE. — *Express the decimal in the form of a common fraction and reduce it to its lowest terms.*

1. Reduce to common fractions: .18, .425, .025, .0125.
2. Reduce to common fractions: .26, .345, .072, .0075.
3. Reduce to common fractions: .85, .175, .008, .0625.

$$\frac{8}{25}=\frac{8\times 4}{25\times 4}=\frac{32}{100}=.32 \qquad \frac{37}{750}=\frac{37\times 1\frac{1}{3}}{750\times 1\frac{1}{3}}=\frac{49\frac{1}{3}}{1000}=.049\tfrac{1}{3}$$

To reduce a common fraction to a decimal:

Rule. — *Multiply both terms of the fraction by a number that will make the denominator a power of* 10 *and express the result in the decimal form. Or,*

Annex ciphers to the numerator and divide by the denominator, and from the right of the quotient point off as many decimal places as there are ciphers annexed.

Note 1. — If there are not as many figures in the quotient as there are ciphers annexed, prefix ciphers.

Note 2. — When the division is not exact, write the remainder over the divisor as a common fraction, or place the sign + after the decimal to show that the result is incomplete.

1. Express in the decimal form: $\frac{3}{16}$, $\frac{19}{40}$, $\frac{23}{750}$, $\frac{9}{4000}$.
2. Express in the decimal form: $\frac{7}{40}$, $\frac{17}{75}$, $\frac{27}{400}$, $\frac{127}{1600}$.
3. Express in the decimal form: $\frac{9}{35}$, $\frac{13}{60}$, $\frac{45}{128}$, $\frac{67}{1250}$.

ADDITION AND SUBTRACTION OF DECIMALS

To add and subtract decimals, write units of the same order in a column and proceed as with whole numbers.

2.45	42.7	5.5	125.75	36.136
1.7	6.25	45.68	40.6	142.023
5.06	38.075	286.375	7.135	65.009
9.21	87.025	337.555	173.485	243.168

8.64	45.6	502.4	180.05	246.008
3.8	9.125	48.625	24.075	25.125
4.84	36.475	453.775	155.975	220.883

LESSON 1

1. Reduce to common fractions: .44, .815, .075, .0375.
2. Reduce to common fractions: .54, .575, .048, .0025.
3. 21.12 – 6.48. 4. 61.4 – 28.6. 5. 9.25 – 4.625.
6. 72.28 – 17.8. 7. 95.8 – 8.95. 8. 46.5 – 9.546.
9. 638.7 – 3.95. 10. 35.2 – .865. 11. 60.6 – .4876.
12. 54.35 – 8.68. 13. 8.62 – 7.84. 14. 96.4 – 8.625.
15. Add 65.8, 9.05, 475.455, 37.8, 7.625, .48, and 684.7.
16. Add 6.5, 48.35, 786.375, 8.65, 74.6, 7.6, and 48.875.
17. Add 68.7, .485, 405.8, 6.875, 73.96, 246.8, and 9.35.
18. Add 64.9, 8.75, 456.3, .485, 8.5, 73.48, and 286.625.
19. Add 6.5, 74.85, 408.036, 9.34, 82.3, 9.4, and 75.294.

LESSON 2

1. Reduce to common fractions: .65, .725, .084, .0064.
2. Reduce to common fractions: .88, .975, .096, .0875.
3. 9.405 – .858. 4. 12.4 – 6.85. 5. 64.5 – 8.375.
6. 46.2 – 8.684. 7. 54.3 – 9.28. 8. 80.7 – 58.25.
9. 9.324 – 4.64. 10. 6.45 – .875. 11. 72.8 – 8.625.
12. 82.68 – 9.84. 13. 36.4 – .635. 14. 9.25 – .6205.
15. Add 6.8, 85.07, 357.642, 49.8, 6.85, 7.5, and 38.468.
16. Add 465.8, 4.65, 9.6, 48.37, 276.365, 85.6, and 7.48.
17. Add 8.45, 52.75, 847.375, 8.2, 75.3, 9.85, and 356.8.
18. Add 5.6, 57.85, 9.75, 86.385, 826.4, 5.76, and 48.37.
19. Add 75.8, 6.65, 7.4875, 47.5, 352.28, 8.7, and .3265.

$.5 = \frac{1}{2}.$ $.6 = \frac{3}{5}.$ $.75 = \frac{3}{4}.$ $.16\frac{2}{3} = \frac{1}{6}.$ $.375 = \frac{3}{8}.$

$.2 = \frac{1}{5}.$ $.8 = \frac{4}{5}.$ $.33\frac{1}{3} = \frac{1}{3}.$ $.83\frac{1}{3} = \frac{5}{6}.$ $.625 = \frac{5}{8}.$

$.4 = \frac{2}{5}.$ $.25 = \frac{1}{4}.$ $.66\frac{2}{3} = \frac{2}{3}.$ $.125 = \frac{1}{8}.$ $.875 = \frac{7}{8}.$

1. Read: .08, .245, 7.028, .0015, 600.06, .00008.

2. Express as common fractions: .2, .25, .12, $.16\frac{2}{3}$, .125.

3. $8.4 + 6.6.$ $7.4 + 4.9.$ $5.3 + 8.7.$ $8.7 + 5.7.$

4. Reduce: $\frac{18}{54}$, $\frac{21}{28}$, $\frac{18}{27}$, $\frac{14}{56}$, $\frac{19}{57}$, $\frac{12}{30}$, $\frac{20}{28}$, $\frac{12}{84}$, $\frac{21}{63}$.

5. $\$1.50 \div \$.03.$ $\$3 \div \$.04.$ $\$5.25 \div \$.05.$

6. Reduce: $\frac{14}{4}$, $\frac{19}{5}$, $\frac{25}{6}$, $\frac{17}{4}$, $\frac{12}{7}$, $\frac{19}{6}$, $\frac{19}{4}$, $\frac{15}{6}$, $\frac{15}{7}$.

7. $8.4 - 3.8.$ $9 - 3.5.$ $8 - 3.25.$ $9.2 - 4.7.$

8. Express decimally: $\frac{1}{2}$, $\frac{1}{6}$, $\frac{2}{5}$, $\frac{5}{6}$, $\frac{1}{20}$, $\frac{2}{25}$, $\frac{2}{125}$.

9. Read: .19, .406, 8.006, .0005, 400.04, .00404.

10. If a horse eats 8 quarts of oats a day, how many bushels will last him 64 days?

11. Express as common fractions: .4, .75, .15, $.83\frac{1}{3}$, .375.

12. In how many days can 8 men do 48 days' work? How many men can do it in 6 days?

13. $6.3 + 8.7.$ $8.25 + 7.75.$ $9.6 + 8.5.$ $7.8 + 4.9.$

14. If 2 men can do a piece of work in 6 days, in how many days can 4 men do it? 6 men? 3 men?

15. $9 - 3.25.$ $8 + 3.45.$ $7 - 3.85.$ $12 - 4.75.$

16. A man paid $4.80 for berries at 8 cents a quart and sold them at 10 cents a quart. Find the gain.

17. Express decimally: $\frac{1}{3}$, $\frac{1}{8}$, $\frac{3}{4}$, $\frac{4}{5}$, $\frac{3}{50}$, $\frac{3}{25}$, $\frac{3}{250}$.

18. How many cubic inches are there in a stick of timber 50 inches long, 8 inches wide, and 3 inches thick?

LESSON 3

1. $9.35 - 4.645$. **2.** $25.6 - 8.75$. **3.** $8.325 - 2.85$.

4. $48.5 - 19.08$. **5.** $42.12 - 8.6$. **6.** $24.2 - 6.875$.

7. $37.5 - 9.125$. **8.** $54.2 - 7.45$. **9.** $16.015 - .95$.

10. Express in the decimal form: $\frac{7}{25}$, $\frac{13}{80}$, $\frac{7}{500}$, $\frac{7}{3000}$.

11. Express in the decimal form: $\frac{6}{20}$, $\frac{16}{35}$, $\frac{123}{250}$, $\frac{57}{2500}$.

12. Add 7.85, 48.068, 6.5, .875, 78.9, 465.62, and 6.59.

13. Add 68.4, 457.65, 9.8, 82.4, 5.84, 59.375, and 84.9.

14. Add 4.7, 35.4, 460.054, 8.6, 45.3, 9.37, and 74.056.

15. At the rate of $5.95 for seven bushels of potatoes, how many bushels can be bought for $37.40?

16. A lady bought 3 pounds of tea at 65 cents a pound and 2 pounds at $1 a pound. Find the average price.

LESSON 4

1. $8.24 - 5.075$. **2.** $35.5 - 9.65$. **3.** $32.015 - 6.4$.

4. $52.4 - 18.85$. **5.** $61.06 - 7.5$. **6.** $40.5 - 5.045$.

7. $60.2 - 8.405$. **8.** $80.5 - .875$. **9.** $50.06 - .486$.

10. Express in the decimal form: $\frac{5}{24}$, $\frac{37}{50}$, $\frac{9}{235}$, $\frac{33}{1250}$.

11. Express in the decimal form: $\frac{8}{75}$, $\frac{19}{25}$, $\frac{121}{125}$, $\frac{321}{5000}$.

12. Add 8.35, 57.045, 8.6, .625, 65.8, 584.87, and 8.42.

13. Add 85.7, 648.85, 8.4, 68.3, 7.65, 42.125, and 88.6.

14. Add 235.007, 68.94, 7.6, 28.4, 7.36, 75.2, and 7.34.

15. Six men bought 1240 acres of land at $16 an acre and sold it for $34,720. Find each man's gain.

16. A miller sold 420 barrels of flour for $1785. At the same price, what would he receive for 375 barrels?

MULTIPLICATION OF DECIMALS

5.38 × 12 means, find 12 times 5.38.

1. 5.38 × 12.	2. .446 × 24.	3. .075 × 48.
5.38	.446	.075
12	24	48
10.76 = 2 times 5.38	1.784 = 4 times .446	.600
53.8 = 10 times 5.38	8.92 = 20 times .446	3.00
64.56 = 12 times 5.38	10.704 = 24 times .446	3.600

844 × .8 means, find $\frac{8}{10}$ of 844.

1. 844 × .8.	2. 63.5 × .7.	3. 9.65 × .9.
84.4 = $\frac{1}{10}$ of 844	6.35 = $\frac{1}{10}$ of 63.5	.965
8	7	9
675.2 = $\frac{8}{10}$ of 844	44.45 = $\frac{7}{10}$ of 63.5	8.685

4625 × .14 means, find $\frac{14}{100}$ of 4625.

1. 4625 × .14.	2. 767.5 × .08.	3. 76.5 × .15.
46.25 = $\frac{1}{100}$ of 4625	7.675 = $\frac{1}{100}$ of 767.5	.765
14	8	15
185.00	61.400 = $\frac{8}{100}$ of 767.5	3.825
462.5		7.65
647.50 = $\frac{14}{100}$ of 4625		11.475

1.6 = $\frac{16}{10}$	4.05 = $\frac{405}{100}$	3.006 = $\frac{3006}{1000}$
1. 48.2 × 1.6.	2. 321.5 × 4.05.	3. 2124 × 3.006
4.82 = $\frac{1}{10}$ of 48.2	3.215 = $\frac{1}{100}$ of 321.5	2.124
16	405	3006
28.92	16.075	12.744
48.2	1286.0	6372.
77.12 = $\frac{16}{10}$ of 48.2	1302.075 = $\frac{405}{100}$ of 321.5	6384.744

LESSON 5

1. 64.5 × 28.6. **2.** 6.003 × 42.5. **3.** 4.525 × 2000.

4. 7.25 × 8.46. **5.** 57.34 × 20.8. **6.** 28.75 × 4000.

7. 75.4 × 43.5. **8.** 5.015 × 40.6. **9.** 312.5 × 8000.

10. 87.5 × .008. **11.** .0075 × .044. **12.** 1.125 × 2004.

13. 9.25 × .004. **14.** 40.08 × 3.75. **15.** 50.25 × 3048.

16. 7015.275 – 639.40856. **17.** 62153.72 – 5478.9365.

18. Add 9.5, 65.04, 365.48, .875, 8.6, 54.35, and 8.276.

19. Find .35 of $740. .07½ of $420. .45 of 780 men.

20. A man raised 1275 quarts of berries and sold .84 of them. How many quarts did he have left?

21. If a man receives a yearly salary of $1800 and spends .65 of it, how much does he save in five years?

LESSON 6

1. 70.8 × 9.06. **2.** 50.25 × 6.04. **3.** 7.475 × 2006.

4. 4.38 × 50.5. **5.** 6.875 × .044. **6.** 23.25 × 3048.

7. 68.5 × .046. **8.** 327.5 × 3.28. **9.** 402.5 × 5024.

10. 8.75 × .008. **11.** 85.75 × .048. **12.** .0075 × 8024.

13. 8103.204 – 425.05275. **14.** 1624.4875 – 94.02875.

15. Express in the decimal form: $\frac{19}{45}$, $\frac{81}{85}$, $\frac{23}{135}$, $\frac{41}{2300}$.

16. Add 5.8, 34.57, 817.6, 8.48, 85.6, 7.35, and 85.476.

17. Add 9.5, 546.8, 62.38, 74.8, 9.25, 65.047, and 6.75.

18. There are 540 pupils in a school, and .55 of them are girls. How many boys are there?

19. A farmer raised 875 bushels of wheat and sold .88 of it at 85 cents a bushel. What did he receive for it?

1. Express as common fractions: .2, .25, .28, $.16\frac{2}{3}$, .125.
2. Find .05 of 450. .06 of 650. .08 of 1500.
3. Reduce: $\frac{24}{72}$, $\frac{12}{32}$, $\frac{16}{36}$, $\frac{14}{98}$, $\frac{50}{75}$, $\frac{18}{30}$, $\frac{15}{90}$, $\frac{16}{56}$, $\frac{66}{88}$.
4. $315 \div 15$. $378 \div 18$. $380 \div 19$. $525 \div 25$.
5. Express decimally: $\frac{1}{2}$, $\frac{1}{6}$, $\frac{2}{5}$, $\frac{5}{6}$, $\frac{9}{20}$, $\frac{7}{25}$, $\frac{3}{125}$.
6. Find .5 of an acre. Find .05 of a square foot.
7. Express as common fractions: .4, .18, .45, $.83\frac{1}{3}$, .375.
8. Find .05 of a mile. Find .04 of a square foot.
9. Reduce: $\frac{23}{6}$, $\frac{24}{5}$, $\frac{18}{7}$, $\frac{28}{4}$, $\frac{36}{6}$, $\frac{44}{5}$, $\frac{25}{7}$, $\frac{47}{4}$, $\frac{45}{6}$.
10. Find .15 of \$400. .25 of \$480. .12 of \$500.
11. Express decimally: $\frac{1}{3}$, $\frac{1}{8}$, $\frac{3}{4}$, $\frac{4}{5}$, $\frac{8}{25}$, $\frac{7}{50}$, $\frac{7}{250}$.
12. •Reduce: $6\frac{3}{4}$, $7\frac{3}{7}$, $5\frac{8}{9}$, $6\frac{4}{7}$, $7\frac{5}{8}$, $8\frac{5}{6}$, $9\frac{2}{5}$.

$8.65 \times 10 = 86.5$. **$.375 \times 100 = 37.5$.** Hence,

To multiply a decimal by 10, 100, 1000, etc.:

RULE.—*Move the decimal point as many places to the right as there are ciphers in the multiplier.*

When several numbers are connected by the four signs, the *terms* are the parts connected by plus or minus signs. Such indicated operations are performed by first simplifying the terms and then combining them.

$$8 + 7 \times 3 - 6 + 16 \div 2 + 5 - 5 \times 3 - 3 - 8 \div 2$$
$$8 + \quad 21 \quad - 6 + \quad 8 \quad + 5 - \quad 15 \quad - 3 - 4 = 14$$

Sometimes the *parenthesis* and *vinculum* enclose some of the numbers. These mean that the numbers enclosed by them are to be treated as a single number. When either of these signs is used, all the expression from the plus or minus sign before it to the plus or minus sign after it is one term, although there may be two or more terms enclosed by it.

$$216 - (24 - 36 \div 4) \times 4 + 342 - (4 + 6 \times 3 - \overline{35 - 8 \times 4})$$
$$216 - \quad 60 \quad + 342 - (4 + \quad 18 \quad - \quad 3)$$
$$216 - \quad 60 \quad + 342 - \quad 19 \quad = 479$$

LESSON 7

1. 70.8 × 24.5. **2.** $665 × .08. **3.** 2075 × .0048.

4. 6.75 × 42.6. **5.** $450 × .15. **6.** 3025 × 1.024.

7. 5.25 × 3.48. **8.** $875 × .22. **9.** 4005 × 23.46.

10. Find the difference between .00045 and .0035.

11. $1474 - 1728 \div 12 - (95 - \overline{45 \times 5} \div 3 + 47 \times 3) \times 8$.

12. Find $.10\frac{1}{3}$ of $486. $.06\frac{2}{3}$ of 372. $.20\frac{1}{4}$ of $680.

13. At 35 cents a peck, for how many bushels of potatoes will a grocer receive $117.60?

14. A merchant paid $110 for silk at $1.25 a yard and sold it at $1.75 a yard. Find his profit.

15. A field is 40 rd. square. At $.85 a rod, what will it cost to enclose it and divide it into 4 squares?

LESSON 8

1. 40.5 × 30.6. **2.** $475 × $.10\frac{1}{5}$. **3.** 1025 × .0008.

4. 8.25 × 20.4. **5.** $640 × $.20\frac{2}{3}$. **6.** 2175 × 2.104.

7. 5.04 × 9.05. **8.** $840 × $.30\frac{3}{4}$. **9.** 3050 × 32.04.

10. Find the difference between .0175 and .008345.

11. $1974 - (143 - 78) - (96 + \overline{13 \times 15} \div 5 - 13 \times 7)$.

12. Find .18 of $96.50. $.10\frac{1}{3}$ of $480. .08 of 1250 men.

13. A man had $8500. He bought a farm and had .16 of his money left. Find the cost of the farm.

14. A speculator bought 24,750 pounds of wool and sold .68 of it. How many pounds did he have left?

15. At 65 cents a rod, what is the cost of building a fence on both sides of a road 3 fourths of a mile long?

DIVISION OF DECIMALS

25.5 ÷ 15 means, find $\frac{1}{15}$ of 25.5.

25.5)15	2778.4)46	3.9)15	.0512)32
15 1.7	276 60.4	3 0 .26	32 .0016
10 5	18 4	90	192
10 5	18 4	90	192

Pupils should be very careful to place the decimal point in the quotient after using the unit figure of the dividend.

1. 329.35 ÷ 7.
2. 1450.8 ÷ 18.
3. .68496 ÷ 8.
4. 7.178 ÷ 36.
5. 289.92 ÷ 48.
6. 11.31 ÷ 26.
7. 991.2 ÷ 14.
8. 1.7204 ÷ 34.
9. 547.4 ÷ 68.

In dividing by a decimal, we first reduce dividend and divisor to the smallest decimal unit in the divisor, and then divide the number of decimal units in the dividend by the number of like units in the divisor.

68.64 ÷ 2.4.	15.3 ÷ 4.08.	357 ÷ 2.04.	313 ÷ 5.008.
686.4)24	1530)408	35700)204	313000)5008
48 28.6	1224 3.75	204 175	30048 62.5
206	3060	1530	12520
192	2856	1428	10016
14 4	2040	1020	25040
14 4	2040	1020	25040

1. 122.5 ÷ 2.8.
2. 23.4 ÷ 6.24.
3. 262.8 ÷ 7.008.
4. 11.04 ÷ 6.4.
5. 39.9 ÷ 4.75.
6. 99.13 ÷ 1.724.
7. 8.145 ÷ 7.5.
8. 91.8 ÷ 4.25.
9. 7.515 ÷ 1.875.

LESSON 9

1. 31.5 ÷ .126. **2.** .387 ÷ .45. **3.** 16.25 ÷ 1625.

4. 73.8 ÷ .008. **5.** 43.7 ÷ .15. **6.** 1625 ÷ 16.25.

7. 9.6 ÷ .0006. **8.** 8.5 ÷ .005. **9.** 75 ÷ .000015.

10. .85 ÷ .0017. **11.** 65.2 ÷ .05. **12.** 25.6 ÷ 16000.

13. 34.75 ÷ 2.5. **14.** 7.5 ÷ 1.25. **15.** 3870 ÷ .0017.

16. Find the difference between .0315 and .00735.

17. Add 8.47, 43.9, 4.36, 9.458, 79.43, 178.5, and 8.57.

18. Find $.06\frac{1}{4}$ of $728. .15 of 657. $.10\frac{1}{3}$ of $450.

19. A farmer sold 7 ninths of his wheat and had 185 bushels left. How many bushels did he raise?

20. A grocer bought 48 bushels of onions at 95 cents a bushel and sold them at $.45 a peck. Find the gain.

LESSON 10

1. 5.58 ÷ .018. **2.** 69.7 ÷ .017. **3.** 65.002 ÷ .005.

4. 67.5 ÷ .015. **5.** .246 ÷ .012. **6.** .112 ÷ .00015.

7. .735 ÷ 10.5. **8.** 57.3 ÷ .004. **9.** 1200.12 ÷ .25.

10. Express in the decimal form: $\frac{9}{35}$, $\frac{7}{55}$, $\frac{29}{125}$, $\frac{435}{1250}$.

11. Add 7.35, 26.4, 65.27, 8.374, 58.3, 226.4, and 9.56.

12. Find $.10\frac{5}{6}$ of $840. .35 of an acre. .06 of $96.50.

13. If 1 twelfth of the value of a piece of land is $675, what is 2 thirds of the value of it?

14. How many posts will it take to build a fence 96 rods long, if the posts are set 8 feet apart?

15. A farmer received $660 for $\frac{5}{8}$ of his wheat at $.75 a bushel. Find the value of his whole crop at that price.

When one of two numbers is a certain fractional part of 100 or of 1000, of $1 or of $10, the product of the two numbers is more easily determined than by the usual process of multiplication.

$25 = \frac{1}{4}$ of 100. **$75 = \frac{3}{4}$ of 100.** **$12\frac{1}{2} = \frac{1}{8}$ of 100.**

$37\frac{1}{2} = \frac{3}{8}$ of 100. **$62\frac{1}{2} = \frac{5}{8}$ of 100.** **$87\frac{1}{2} = \frac{7}{8}$ of 100.**

$100 \times 28 = 2800$, hence $25 \times 28 = \frac{1}{4}$ of 2800, or 700.

1. 25×24.
2. $12\frac{1}{2} \times 32$.
3. $37\frac{1}{2} \times 28$.
4. 75×36.
5. $62\frac{1}{2} \times 28$.
6. $87\frac{1}{2} \times 48$.
7. 25×26.
8. $12\frac{1}{2} \times 36$.
9. $37\frac{1}{2} \times 54$.

$\$.25 = \$\frac{1}{4}$. **$\$.75 = \$\frac{3}{4}$.** **$\$.12\frac{1}{2} = \$\frac{1}{8}$.** **$\$.37\frac{1}{2} = \$\frac{3}{8}$.**

$\$1 \times 96 = \$96$, hence $\$.12\frac{1}{2} \times 96 = \frac{1}{8}$ of $96, or $12.

1. $\$.25 \times 24$.
2. $\$.12\frac{1}{2} \times 48$.
3. $\$.37\frac{1}{2} \times 24$.
4. $\$.75 \times 32$.
5. $\$.62\frac{1}{2} \times 32$.
6. $\$.87\frac{1}{2} \times 48$.
7. $\$.25 \times 27$.
8. $\$.12\frac{1}{2} \times 36$.
9. $\$.37\frac{1}{2} \times 56$.

$125 = \frac{1}{8}$ of 1000. **$250 = \frac{1}{4}$ of 1000.** **$375 = \frac{3}{8}$ of 1000.**

$56 \times 1000 = 56{,}000$, $56 \times 625 = \frac{5}{8}$ of 56,000, or 35,000.

1. 125×24.
2. 250×28.
3. 375×32.
4. 625×48.
5. 750×32.
6. 375×56.
7. 125×64.
8. 375×56.
9. 625×72.

$\$1.25 = \frac{1}{8}$ of $10. **$\$2.50 = \frac{1}{4}$ of $10.** **$\$3.75 = \frac{3}{8}$ of $10.**

$\$10 \times 56 = \$560$, $\$3.75 \times 56 = \frac{3}{8}$ of $560, or $210.

1. $\$1.25 \times 24$.
2. $\$2.50 \times 48$.
3. $\$3.75 \times 32$.
4. $\$6.25 \times 48$.
5. $\$7.50 \times 32$.
6. $\$8.75 \times 56$.
7. $\$1.25 \times 36$.
8. $\$2.50 \times 26$.
9. $\$3.75 \times 64$.

LESSON 11

1. 1002.8 ÷ .23. **2.** 250 ÷ .032. **3.** $975 × .20⅓.
4. 12.1 ÷ .0044. **5.** 132 ÷ .048. **6.** $684 × .30⅔.
7. 2.516 ÷ .312. **8.** 341 ÷ .023. **9.** $954 × .40⅚.

10. 246 × 8 − 169 ÷ 13 − (225 ÷ 15) × 16 + 207 − 378.

11. Find the cost of 16⅜ cords of wood at $4½ a cord.

12. Find .20⅚ of $846. .08 of $87.50. .15 of a mile.

13. Add 6.4, 7.56, 85.008, 40.8, 35.65, 6.5, and 275.342.

14. A man paid $5460 for land at $6.50 an acre and sold it at $14 an acre. Find the gain.

15. A rectangular field is 35 rods long, and its perimeter is 126 rods. How wide is the field?

16. The perimeter of a square piece of land is 160 rods. What is the value of the land at $85 an acre?

LESSON 12

1. 5.85 ÷ .075. **2.** 3600 ÷ .048. **3.** 32.6 ÷ .045.
4. 19.53 ÷ 4.2. **5.** 6909 ÷ .705. **6.** 98.4 ÷ .024.

7. Find the difference between .2145 and .03758.

8. Find .28 of $865. .07½ of 560. .20⅓ of $468.

9. Add 8.5, 72.4, 650.75, 95.6, 74.55, 5.8, and 386.275.

10. Divide five hundred ninety-five millionths by ⅞ and express the quotient in three forms.

11. A farmer sold 5 eighths of his wheat and had 498 bushels left. How many bushels did he sell?

12. If a man receives $2.80 for .8 of a day's work, how much will he receive, if he works 12.4 days?

13. At $4.75 a cord, what is the value of a pile of wood 68 feet long, 12 feet wide, and 4 feet high?

1. A man sold a watch for $48 and lost $\frac{1}{4}$ as much as it cost. Find the cost.

2. Express as common fractions: .2, .25, .36, .16$\frac{2}{3}$, .125, .4, .55, .26, .83$\frac{1}{3}$, .375.

3. Express decimally: $\frac{1}{3}$, $\frac{1}{8}$, $\frac{3}{4}$, $\frac{4}{5}$, $\frac{11}{50}$, $\frac{14}{25}$, $\frac{1}{2}$, $\frac{13}{250}$, $\frac{1}{6}$, $\frac{2}{5}$, $\frac{5}{6}$, $\frac{12}{25}$, $\frac{13}{50}$, $\frac{4}{125}$.

4. A man received $84 for 7 eighths of his berries at 10 cents a quart. How many quarts did he raise?

COST BY THE 100, 1000, OR TON

If 100 lb. of beef cost $8.60, 1 lb. costs 1 hundredth of $8.60, or $.086, and 875 lb. cost

$$\$.086 \times 875 = \$75.25$$

If 1000 ft. of lumber cost $24, 1 ft. costs 1 thousandth of $24, or $.024, and 8475 ft. cost

$$\$.024 \times 8475 = \$203.40$$

A man bought lumber at $28 per M, paying $234.50 for it. How many feet did he buy? 1 ft. cost $.028.

$, tr.

$$\$234.50 \div \$.028 = 8375$$

At $15 a ton, 1000 lb. of hay cost $7.50, and 1 lb. costs 1 thousandth of $7.50, or $.0075. 9480 lb. cost

$$\$.0075 \times 9480 = \$71.10$$

A man bought hay at $16 a ton, paying $75 for it. How many pounds did he buy? 1 lb. cost $.008.

$$\$75 \div \$.008 = 9375$$

What will 8760 pounds of hay cost at $12 a ton? At $13 a ton? At $14 a ton? At $9.50 a ton?

LESSON 13

1. Find the cost of 985 pounds of beef at $6 per C. At $9 per C. At $6.75 per C.

2. Find the value of 3865 feet of lumber at $12 per M. At $16 per M. At $14.50 per M.

3. Find the value of 4365 feet of lumber at $18 per M. At $15.75 per M. At $16.75 per M.

4. Find the value of 5395 pounds of coal at $6 a ton. At $7 a ton. At $8 a ton. At $5.80 a ton.

5. A man bought a load of coal at $5.60 a ton, paying $6.20 for it. Find the weight of the load.

6. A farmer sold six loads of hay averaging 2265 pounds at $15 a ton. How much did he receive for it?

7. At $6.45 a hundred, how many pounds of beef can be bought for forty-seven dollars seventy-three cents?

LESSON 14

1. Find the cost of 635 pounds of beef at $7.50 per C. At $8.35 per C. At $9.65 per C.

2. A man bought lumber at $28 per M, paying $251.02 for it. How many feet did he buy?

3. Find the value of 9485 feet of lumber at $18.75 per M. At $24.25 per M. At $26.75 per M.

4. Find the value of 8265 pounds of hay at $12.75 a ton. At $16.25 a ton. At $18.50 per ton.

5. A dealer sold 16 bales of hay averaging 235 pounds at 85 cents per C. How much did he receive for it?

6. At $19.80 a ton, what is the value of two loads of hay weighing 1880 and 2385 pounds, respectively?

7. A farmer sold three loads of straw, each load weighing 1850 pounds, at $12.50 a ton. Find the value of it.

The phrase, *per cent*, and the symbol, %, mean hundredths. 5% is $\frac{5}{100}$. 15% is $\frac{15}{100}$. $4\frac{1}{2}$% is $\frac{4\frac{1}{2}}{100}$, etc.

Find 18% of 425.	$7\frac{1}{2}$% of 468.	48% of 6500.
4.25 = 1% of 425	4.68 = 1% of 468	65
18	$7\frac{1}{2}$	48
34.00	2.34	520
42.5	32.76	260
76.50 = 18% of 425	35.10 = $7\frac{1}{2}$% of 468	3120

1. Find 6 per cent of $300. 7 per cent of $500. 15% of $300. 16% of 400 sheep.

2. Find .6 of an acre. Find .8 of a square foot.

3. Find 4 per cent of $800. 5 per cent of 900 men. $4\frac{1}{2}$% of $600. $\frac{1}{2}$% of 4800 bushels.

4. What is the price per pound at $20 a ton? At $10?

5. At $20 a ton, what will 4875 pounds of hay cost? What will 2860 pounds cost?

6. At 4 cents apiece, how many oranges cost $4.32?

7. Express as common fractions: .6, .34, .44, $.33\frac{1}{3}$, .75, .625, .8, .38, $.66\frac{2}{3}$, .875.

8. Reduce: $\frac{21}{56}$, $\frac{28}{36}$, $\frac{18}{72}$, $\frac{27}{81}$, $\frac{24}{32}$, $\frac{17}{85}$, $\frac{20}{24}$, $\frac{18}{45}$, $\frac{24}{96}$.

9. At $10 a ton, what will 2860 pounds of hay cost? What will 3700 pounds cost?

10. Reduce: $\frac{15}{8}$, $\frac{19}{7}$, $\frac{37}{4}$, $\frac{27}{6}$, $\frac{18}{8}$, $\frac{17}{7}$, $\frac{34}{6}$, $\frac{42}{4}$, $\frac{39}{5}$.

11. Express decimally: $\frac{1}{4}$, $\frac{2}{3}$, $\frac{3}{8}$, $\frac{13}{20}$, $\frac{16}{25}$, $\frac{11}{200}$, $\frac{1}{5}$, $\frac{3}{4}$, $\frac{3}{5}$, $\frac{7}{8}$, $\frac{16}{25}$, $\frac{13}{50}$, $\frac{6}{125}$.

12. Find 4% of $350. 6% of $175. 4% of $450.

13. Find 9% of $700. 35% of 200 bushels. 15% of 600 men. 12% of $800. $\frac{3}{4}$% of $6000. 5% of an acre.

LESSON 15

1. Find the common prime factors of 48, 72, and 112.

2. Find 15% of $380. 8% of $96.50. 7½% of $684. 20⅓% of $168. 10⅔% of $579.

3. Find the value of 7465 feet of lumber at $24 per M. At $18.50 per M. At $28 per M.

4. Find the value of 8275 pounds of hay at $9 a ton. At $11 a ton. At $8.50 a ton. At $13 a ton.

5. What is the average price of 25 cows, if 18 of them cost $50 a head and the others $125 a head?

6. A man bought a house for $7500 and sold it at a profit of 24%. Find the sum received for the house.

7. A merchant received $37.50 for ⅜ of a piece of silk at $1.25 a yard. How many yards did he have left?

LESSON 16

1. Find the greatest common divisor of 768 and 5184.

2. Find the least common multiple of 63, 81, and 135.

3. Find .8% of $875. 135% of $640. 30⅔% of $1275. ¾% of $8496. 225% of $280.

4. A man received $79.20 for 8 loads of hay at $9 a ton. Find the average weight of the loads.

5. The product of three numbers is 18,615, and two of them are 15 and 17. Find the other number.

6. At $8.80 per thousand, how many brick can be bought for eighty-three dollars thirty-eight cents?

7. A farmer sold 10 tons 400 pounds of potatoes at 65 cents a bushel. How much did he receive for them?

8. A field is 120 rd. by 80 rd. How many rods of fence will enclose it and divide it into 6 square fields?

1. Find 4% of $400. 6% of $700. 8% of 500 men. 5% of $450. 15% of $300.

2. At $20 a ton, what will 6380 pounds of hay cost?

3. Express as common fractions: .2, .25, .48, .16⅔, .016, .4, .42, .65, .83⅓, .024.

4. 56 × 125. 250 × 36. 48 × 375. 64 × 875.

5. Express decimally: $\frac{1}{2}$, $\frac{1}{6}$, $\frac{2}{5}$, $\frac{17}{25}$, $\frac{19}{50}$, $\frac{7}{125}$, $\frac{1}{3}$, $\frac{1}{8}$, $\frac{3}{4}$, $\frac{4}{5}$, $\frac{18}{25}$, $\frac{17}{50}$, $\frac{9}{125}$.

6. $\frac{1}{2}$ of a foot is $\frac{1}{9}$ of $\frac{1}{4}$ of a yard is $\frac{1}{3}$ of

7. A man sold .15 of his flock of 400 sheep at $4 a head. How much did he receive for them?

8. Reduce: $\frac{27}{36}$, $\frac{30}{48}$, $\frac{24}{27}$, $\frac{28}{84}$, $\frac{19}{76}$, $\frac{21}{35}$, $\frac{44}{77}$, $\frac{30}{42}$, $\frac{25}{45}$.

9. Find 7% of $650. 9% of 800 bushels. 4% of $6000. 5% of $8000. 5% of $2500. 14% of 500 sheep.

10. At $10 a ton, what will 3680 pounds of hay cost?

11. A farmer raised 800 bushels of potatoes and sold 85% of them. How many bushels did he have left?

In dividing by a complex decimal, multiply dividend and divisor by the denominator of the common fraction.

1. 115 ÷ .15⅓.

```
11500(15⅓
    3  3
34500(46
322   750
 230
 230
   0
```

2. 93 ÷ .20⅔.

```
 9300(20⅔
    3  3
27900(62
248   450
 310
 310
   0
```

3. 910 ÷ .10⅚.

```
 91000(10⅚
     6  6
546000(65
520    8400
 260
 260
  00
```

LESSON 17

1. $330 \div .07\frac{1}{3}$. **2.** $8\frac{1}{2} + 9\frac{3}{4} + 7\frac{2}{3}$. **3.** $455 \div .10\frac{5}{6}$.
4. $624 \div .08\frac{2}{3}$. **5.** $8\frac{4}{5} + 6\frac{1}{2} + 4\frac{3}{4}$. **6.** $844 \div .35\frac{1}{6}$.

7. Find the common prime factors of 741 and 1938.

8. At $8.75 per M, what is the cost of 28,440 brick?

9. Find 65% of a ton. 10⅔% of $75. 66⅔% of 4758.

10. A man bought 3875 feet of lumber at $16 per M. How much did he pay for it?

11. Find the value of 9785 pounds of hay at $11 a ton. At $12.75 a ton. At $14.50 a ton.

12. There are 680 pupils in a school, sixty-five per cent of whom are girls. How many boys are there?

13. At $3.75 a cord, what is the value of a pile of wood 40 feet long and 8 feet square at the ends?

LESSON 18

1. $164 \div .10\frac{1}{4}$. **2.** $8\frac{2}{3} + 6\frac{5}{6} - 5\frac{7}{8}$. **3.** $736 \div .30\frac{2}{3}$.
4. $450 \div .16\frac{2}{3}$. **5.** $8\frac{1}{6} + 6\frac{2}{3} - 5\frac{7}{9}$. **6.** $600 \div .10\frac{5}{7}$.

7. Find the greatest common divisor of 857 and 4242.

8. Find 28% of $424. .8% of $6375. 7½% of $856.

9. A man bought a load of coal at $5.80 a ton for $4.93. How many pounds did he buy?

10. If 1 twelfth of the value of a piece of land is $875, what is $\frac{3}{4}$ of the value of it?

11. At $1.25 a rod, what will it cost to build a fence on both sides of a road $\frac{3}{4}$ of a mile long?

12. From six thousandths, subtract eight millionths and multiply the result by eight and four hundredths.

13. A farmer raised 975 bushels of wheat and sold .84 of it at 85 cents a bushel. What did he receive for it?

20% = ⅕. 75% = ¾. 33⅓% = ⅓. 37½% = ⅜.
25% = ¼. 11⅑% = ⅑. 66⅔% = ⅔. 62½% = ⅝.
50% = ½. 16⅔% = ⅙. 12½% = ⅛. 87½% = ⅞.

1. Find 25% of $60. 20% of $80. 50% of $840.

2. Express as common fractions: .6, .52, .46, .33⅓, .015.

3. Find 12½% of $240. 33⅓% of $180. 16⅔% of $150.

4. Express decimally: ¼, ⅔, ⅜, ⅝, 11/125, 13/200, 17/250.

5. 96 × 750. 64 × 125. 72 × 375. 48 × 250.

6. At $10 a ton, what will 7400 pounds of hay cost?

7. Find 37½% of a mile. Find 16⅔% of a yard.

8. Express as common fractions: .8, .75, .54, .66⅔, .032.

9. 56 × 875. 48 × 375. 24 × 625. 72 × 750.

10. Express decimally: ⅕, ¾, ⅗, ⅞, 17/20, 19/25, 12/125.

11. Find 33⅓% of $240. 87½% of 640. 20% of $350.

12. At $20 a ton, what will 7635 pounds of hay cost?

13. At five cents a yard, how many yards of muslin can be bought for six dollars?

14. Find 6% of $450. 5% of $750. 8% of $650.

15. At the rate of $1.60 a bushel, what will a boy receive for 240 quarts of nuts?

16. Find 33⅓% of a square foot. 87½% of an acre.

17. A farmer received $240 for 4 fifths of his hay at $12 a ton. How many tons did he have left?

18. Find 12½% of $8.48. 20% of $5.75. 7% of $250.

19. A merchant bought goods for $4000 and sold them at an average profit of 15%. What did he get for them?

LESSON 19

1. $4\frac{2}{3} + 7\frac{3}{4} + 9\frac{1}{2}$. **2.** $6\frac{1}{2} - 2\frac{2}{3}$. **3.** $9\frac{5}{8} + 7\frac{2}{3} - 4\frac{5}{6}$.

4. $5\frac{4}{5} + 6\frac{1}{2} + 3\frac{3}{4}$. **5.** $7\frac{1}{3} - 3\frac{3}{4}$. **6.** $8\frac{4}{5} + 6\frac{1}{2} - 5\frac{3}{4}$.

7. At $24.40 per M, how much lumber costs $225.09?

8. What is the value of 35% of 2140 bushels of wheat at 85 cents a bushel?

9. How many posts are required for a fence 42 rods long, if the posts are set 7 feet apart?

10. If a man receives $2.80 for .8 of a day's work, how much should he receive, if he works 8.4 days?

11. A man received $462 for $\frac{7}{8}$ of his wheat at 75 cents a bushel. How many bushels did he have left?

12. Find $12\frac{1}{2}$% of 4264. $16\frac{2}{3}$% of $894. $37\frac{1}{2}$% of 1296. 25% of $960. $33\frac{1}{3}$% of $87.60. 75% of $12.64.

LESSON 20

1. $8\frac{3}{4} + 7\frac{5}{6} + 4\frac{2}{3}$. **2.** $8\frac{2}{5} - 3\frac{2}{3}$. **3.** $9\frac{2}{5} + 6\frac{3}{4} - 5\frac{7}{8}$.

4. $6\frac{1}{2} + 8\frac{5}{6} + 7\frac{3}{4}$. **5.** $9\frac{1}{3} - 4\frac{6}{7}$. **6.** $8\frac{3}{4} + 9\frac{2}{3} - 6\frac{5}{8}$.

7. What are the prime factors of 736, 891, and 2336?

8. How much coal, at $6.80 a ton, will cost $12.75?

9. Find $33\frac{1}{3}$% of $1656. $62\frac{1}{2}$% of $780. $\frac{3}{4}$% of $5264.

10. Find the value of 13,740 pounds of hay at $15 a ton. At $18.50 a ton. At $19 a ton.

11. At $4.85 a hundred, what is the value of four thousand eight hundred forty pounds of sugar?

12. A man sold 1 ninth of his wheat for $86.75. At the same price, what is half the remainder worth?

13. The perimeter of a square field is 128 rods. Find the value of the field at sixty-five dollars an acre.

1. Find 1% of $845. 5% of $700. 2% of $2300. 25% of a yard. ½% of $640.

2. Express decimally: $\frac{1}{2}$, $\frac{1}{6}$, $\frac{2}{5}$, $\frac{5}{6}$, $\frac{21}{25}$, $\frac{21}{50}$, $\frac{13}{125}$.

3. Express as common fractions: .2, .25, .85, .16⅔, .035, .4, .56, .58, .83⅓, .048.

4. At $10 a ton, what will 4440 pounds of hay cost?

5. Find 12% of $700. 45% of 500 bushels. ¾% of $6000. 9% of $2000. 24% of 4000 men.

6. $.64 × 12½. $1.60 × 12½. $24 × 12½.

7. A grocer paid $80 for flour at $4 a barrel and sold it at $4.75 a barrel. Find the gain.

8. Express decimally: $\frac{1}{3}$, $\frac{1}{8}$, $\frac{3}{4}$, $\frac{4}{5}$, $\frac{14}{125}$, $\frac{17}{200}$, $\frac{19}{250}$.

9. A farmer raised 640 bushels of potatoes and sold 87½% of them. How many bushels had he left?

---

245 is 7 % of what number?		$45.36 is 6 % of what?
7)245.00	Since 245 is $\frac{7}{100}$ of some number, $\frac{1}{100}$ of the number is 35, and the whole number is 3500.	6)$45.36
35.00		7.56
3500		$756

1. 49 is 5 % of what number? $180 is 24 % of what?

2. 96 is 4 % of what number? $225 is 18 % of what?

3. 57 is 6 % of what number? $209 is 55 % of what?

4. 62 is 8 % of what number? $660 is 12 % of what?

5. A man sold 1700 quarts of berries, which was 85 % of his whole crop. How many quarts did he raise?

6. A man sold a piece of land at a profit of $1400, which was 35 % of the cost. What did he receive for it?

LESSON 21

1. $9840 \times .20\frac{2}{3}$. **2.** $282 \div .15\frac{2}{3}$. **3.** $1336 \div .55\frac{2}{3}$.

4. $8760 \times .30\frac{5}{6}$. **5.** $924 \div .07\frac{1}{3}$. **6.** $2352 \div .40\frac{5}{6}$.

7. 114 is .15 of what? $930 is .24 of what sum?

8. Find the smallest number that is exactly divisible by 84, 336, and 472.

9. A man paid $208.20 for lumber at $24 a thousand feet. How many feet did he buy?

10. A farmer sold hay at $16 a ton, receiving $122 for it. How many pounds did he sell?

11. A man sold .65 of his wheat and had 294 bushels left. How many bushels did he raise?

12. A merchant bought goods for $1875 and sold them at a profit of 24%. How much did he receive for them?

LESSON 22

1. $9\frac{2}{5} + 8\frac{7}{8} + 6\frac{3}{4}$. **2.** $7\frac{1}{8} - 4\frac{3}{4}$. **3.** $7\frac{4}{5} + 6\frac{2}{3} - 4\frac{5}{6}$.

4. $8\frac{1}{2} + 9\frac{2}{3} + 7\frac{3}{4}$. **5.** $8\frac{1}{3} - 5\frac{6}{7}$. **6.** $6\frac{5}{6} + 8\frac{2}{3} - 6\frac{7}{9}$.

7. A man sold 33 sheep, which was .44 of his whole flock. How many did he have left?

8. A man bought .8 of a ton of coal for $4.40. At the same price, what would 5.45 tons cost?

9. At $5.80 a ton, what is the value of 5 loads of coal, if the average weight is 1875 pounds?

10. The product of three numbers is 97,284, and two of them are 33 and 44. Find the other number.

11. A rectangular field 40 rods long has a perimeter of 150 rods. Find the area of the field in acres.

12. A carpenter worked .6 of a day for $2.25. At the same daily wages, what would he receive for 8.2 days?

1. Express as common fractions: .6, .95, .64, .33$\frac{1}{3}$, .045.

2. \$.38 × 25. \$1.60 × 25. \$26 × 25.

3. Express decimally: $\frac{1}{4}$, $\frac{2}{5}$, $\frac{3}{8}$, $\frac{5}{8}$, $\frac{19}{20}$, $\frac{28}{50}$, $\frac{19}{200}$.

4. Find $\frac{1}{2}$% of \$680. 5% of \$550. 6% of \$5000.

5. Express as common fractions: .8, .75, .12, .66$\frac{2}{3}$, .056.

6. If 3 eighths of a yard of ribbon is worth 45 cents, what would 5 yards cost?

7. Find .6 of a mile. Find .9 of a square foot.

8. A man received \$75 for 1 eighth of his sheep at \$3 a head. How many did he have left?

9. At \$20 a ton, what will 8865 pounds of hay cost?

10. When fifteen eggs are selling for twenty-five cents, what is the price per dozen?

11. Find 1$\frac{1}{2}$% of \$240. 3% of \$750. $\frac{1}{4}$% of \$4800.

12. A man bought a watch for \$48, which was $\frac{6}{11}$ of his money. How much did he have left?

13. 6$\frac{3}{4}$ + 8$\frac{1}{4}$. 9 − 5$\frac{1}{2}$. 7$\frac{2}{5}$ + 5$\frac{3}{5}$. 8 − 2$\frac{2}{3}$.

14. A man sold a carriage for \$120 and lost 1 fourth as much as it cost. What did it cost?

15. Find 4$\frac{1}{2}$% of \$200. $\frac{1}{3}$% of \$240. 8% of \$2500.

16. What two forms can you make by uniting 3 rectangles, each 1 foot long and 4 inches wide?

17. $\frac{1}{2}$ of a foot is 16$\frac{2}{3}$% of $\frac{1}{2}$ of 18 in. is 25% of

18. A merchant bought silk for \$750 and sold it at a profit of 20%. How much did he receive for it?

19. Express decimally: $\frac{1}{5}$, $\frac{3}{4}$, $\frac{3}{5}$, $\frac{7}{8}$, $\frac{22}{25}$, $\frac{16}{125}$, $\frac{21}{250}$.

20. A farmer sold 450 bushels of potatoes, which was 75% of his crop. How many bushels did he have left?

LESSON 23

1. $9\frac{3}{4} + 7\frac{4}{5} + 6\frac{5}{6}$. **2.** $550 \div .07\frac{1}{3}$. **3.** $7\frac{2}{3} + 9\frac{3}{4} - 6\frac{7}{8}$.
4. $6\frac{1}{2} + 8\frac{2}{3} + 9\frac{5}{8}$. **5.** $686 \div .08\frac{1}{6}$. **6.** $9\frac{1}{2} - 3\frac{2}{3} - 2\frac{7}{8}$.

7. Find the common prime factors of 1072 and 8019.

8. Find the cost of 895 pounds of coal at $6.60 a ton.

9. Find $8\frac{1}{2}\%$ of $328. $20\frac{3}{8}\%$ of 526. 25% of $1267.

10. At 20 cents a half peck, for how many bushels of onions will a grocer get $28.80?

11. At $75 an acre, what is the value of a rectangular field 36 rods long and 32 rods wide?

12. Find the value of 8 loads of potatoes, each load weighing 2280 pounds, at 65 cents a bushel.

13. What is the average price of 25 sheep, if 17 of them cost $5.75 a head and the others $8.25 a head?

LESSON 24

1. $7\frac{1}{2} + 8\frac{3}{4} + 9\frac{4}{5}$. **2.** $\$8400 \times .30\frac{2}{3}$. **3.** $9\frac{1}{2} - 2\frac{2}{5} - 4\frac{4}{6}$.
4. $8\frac{1}{2} + 5\frac{4}{5} + 8\frac{5}{6}$. **5.** $\$7800 \times .40\frac{5}{6}$. **6.** $8\frac{2}{3} - 2\frac{5}{6} - 4\frac{5}{9}$.

7. Find the difference between .00445 and .0273.

8. Find the greatest common divisor of 1197 and 1312.

9. At $9.50 a ton what will 3480 lb. of plaster cost?

10. $82.17 is .44 of what? $375.98 is 88% of what?

11. There are 680 pupils in a school, 55% of whom are girls. How many boys are there?

12. A man bought a coat for $18, which was 24% of his money. How much money did he have left?

13. At $3.75 a cord, what is the value of a pile of wood 72 feet long and 8 feet square at the ends?

14. If 4.375 barrels of flour cost $21, what is the value of 9.25 barrels at the same price per barrel?

ACCOUNTS AND BILLS

An **Account** is a record of indebtedness for goods bought or sold, cash paid or received, or services rendered.

A **Debtor** is a person who owes another.

A **Creditor** is a person whom another owes.

A **Bill** is a written statement of a debtor's account, made by the creditor.

A **Receipt** is a creditor's written acknowledgment that he has received payment of part or all of a debt.

A bill is receipted when the words, *Received payment*, are written at the bottom, and the creditor's name is signed by himself or by some authorized person.

FORM OF A RECEIPTED BILL.

ALBANY, N. Y., NOV. 8, 1902.

MR. CHARLES E. BAKER

Bought of F. W. BURLEIGH & CO.

1902					
Sept.	15	8 lb. Coffee	35¢	2	80
	24	6 lb. Tea	65	3	90
Oct.	12	45 lb. Sugar	5	2	25
	28	1 bbl. Flour		4	85
				13	80

Received payment,

F. W. BURLEIGH & CO.

Make a bill for 6 articles bought at a grocery store at different times and receipt it as the proprietor.

Make a bill for 8 articles bought at a dry goods store at different times and receipt it for the proprietor.

LESSON 25

1. $7\frac{2}{3} + 8\frac{5}{6} + 4\frac{3}{8}$. 2. $8\frac{3}{7} - 4\frac{2}{3}$. 3. $9\frac{1}{3} - 2\frac{3}{4} - 4\frac{7}{8}$.

4. $8\frac{1}{2} + 5\frac{2}{3} + 7\frac{4}{5}$. 5. $9\frac{1}{2} - 4\frac{8}{9}$. 6. $8\frac{1}{2} - 3\frac{3}{4} - 2\frac{6}{7}$.

7. Find .6% of $6750. .08% of $875. .009% of 54,000.

8. When .4 of a ton of hay is worth $7, what will a farmer receive for 8.8 tons?

9. Find the value of 8465 feet of lumber at $17 per M. At $25 per M. At $28 per M.

10. A man bought a coat for $8.25, which was 44% of his money. How much did he have left?

11. At what price per bushel can a miller buy seven hundred eighty bushels of wheat for $741?

12. A man received $420 for $\frac{7}{8}$ of his wheat at 75 cents a bushel. How many bushels did he have left?

LESSON 26

1. At $4.25 a cord, what is the value of a cubical pile of wood eight feet high?

2. Find the value of 6 loads of hay, the average weight being 2345 pounds, at $16.80 a ton.

3. Find the cost of twenty-six thousand four hundred thirty-five feet of lumber at $28.40 per M.

4. A man sold 42 sheep, which was equal to 28% of the number he had left. How many had he at first?

5. At $6.25 a rod, what will be the cost of building a fence around a square field 24 rods on each side?

6. A man bought 88 yd. of silk at $1.75 a yard and sold it at a profit of 25%. Find the sum received for it.

7. A grocer sold .375 of a barrel of flour for $1.95. At the same price, what would he receive for 6.875 bbl.?

1. Express as common fractions: .2, .25, .15, .16⅔, .125.

2. Find .7 of a mile. Find .07 of an acre.

3. $.75 × 25. $.26 × 25. $1.28 × 25. $32 × 25.

4. A rectangle contains 60 2-inch squares. If it is 1 foot wide, how long is it?

5. At $10 a ton, what will 5850 pounds of hay cost?

6. At $75 an acre, what is the value of a square piece of land 40 rods on each side?

7. $3.60 ÷ $.06. $9 ÷ $.05. $4.50 ÷ $.03.

8. The perimeter of a square field is 1 mile. How many acres are there in the field?

9. 80 rods is 50% of 40 square rods is 25% of

10. A lady bought a cloak for $15, which was 25% of her money. How much did she have left?

11. Express as common fractions: .4, .14, .16, .83⅓, .375.

12. If 15 cents is 1 fifth of a boy's money, how many oranges can he buy at 3 cents apiece?

13. Find 1% of $725. ½% of $680. ⅓% of $240.

14. A grocer bought tea for $160 and sold it at a profit of 25%. What did he receive for it?

15. $.64 × 12½. $6.40 × 37½. $64 × 62½.

16. At $3 a cord, what is the value of three piles of cord-wood, each 40 feet long and 4 feet high?

17. Find 4% of $550. 7% of $300. 1½% of $2200.

18. A grocer bought tea at 45 cents a pound and sold it at a profit of 33⅓%. What did he receive for it?

19. Express as common fractions: .18, .24, .35, .055, .064.

20. How many cubic inches are there in a piece of marble 50 inches long and 4 inches square at the ends?

LESSON 27

1. $6\frac{1}{2} + 9\frac{2}{3} + 5\frac{5}{9}$. **2.** $70\frac{2}{7} - 28\frac{2}{3}$. **3.** $8\frac{2}{3} + 5\frac{5}{6} - 7\frac{7}{8}$.

4. $9\frac{1}{2} + 4\frac{3}{4} + 7\frac{6}{7}$. **5.** $69\frac{3}{4} - 58\frac{5}{6}$. **6.** $9\frac{1}{2} - 2\frac{2}{3} - 3\frac{4}{5}$.

7. At $24 per M, how many feet of lumber cost $210?

8. If 1 twelfth of the value of a farm is $675, what is 2 thirds of the value of it?

9. How many 2-inch squares are there in a sheet of paper 8 yards long and 3 feet wide?

10. A man sold 646 bushels of oats, which was .68 of his crop. How many bushels did he keep?

11. At $45 an acre, what is the value of a rectangular piece of land 43 rods long and 32 rods wide?

12. A merchant sold silk at $1.60 a yard for $144 and lost $54. Find the cost of the silk per yard.

LESSON 28

1. At $5.40 a ton, how much coal will cost $50.22?

2. 48 rd. is .15 of what? 700 lb. is 35% of what?

3. A man sold 18,650 pounds of hay at $16.50 a ton. How much did he receive for it?

4. A farmer sold .85 of his wheat and had 240 bushels left. How many bushels did he sell?

5. How many cubic inches are there in a block of wood 4 feet long and 6 inches square at the ends?

6. At $4.75 a cord, what is the value of three piles of cord-wood, each 96 feet long and 4 feet high?

7. A grocer bought 65 barrels of flour at $4.25 a barrel and sold it at a profit of 15%. Find the profit.

8. A man paid $102 for apples at $1.20 a barrel and sold them at $1.85 a barrel. How much did he gain?

1. A man bought 25 acres of land at $56 an acre. What did he pay for it?

2. $6.24 ÷ $.03. $12 ÷ $.04. $12.90 ÷ $.06.

3. At $1.25 a barrel, what will a farmer receive for 96 barrels of apples?

4. Find 1% of $1425. $\frac{1}{4}$% of $4800. 75% of 300 men.

5. What part of an acre is a piece of land 5 rods long and 4 rods wide?

6. 308 ÷ 14. 465 ÷ 15. 357 ÷ 17. 462 ÷ 22.

7. If a horse eats 8 quarts of oats a day, how many bushels will last him 50 days?

8. Find .07 of a mile. Find .7 of an acre.

9. At 38 cents a bushel, what will a farmer receive for 1 ton 1200 pounds of oats?

10. $\frac{2}{3} \times 8$. $3\frac{5}{8} \times 4$. $\frac{11}{12} \times 4$. $3\frac{3}{4} \times 3$.

11. A merchant sold 64 pairs of shoes at $3.75 a pair. How much did he receive for them?

12. $.56 × 12$\frac{1}{2}$. $.25 × 38. $2.40 × 62$\frac{1}{2}$. $64 × 37$\frac{1}{2}$.

13. At $1.50 a rod, what is the cost of enclosing a garden 14 rods long and 11 rods wide?

14. One foot is 33$\frac{1}{3}$% of 500 pounds is 25% of

15. At 12$\frac{1}{2}$ cents a square foot, what will be the cost of a piece of zinc 6 feet square?

16. Find 4% of $650. 5% of $350. 25% of a mile.

17. If a grocer sells 3 pounds of rice for 25 cents, for how many pounds does he receive $2.75?

18. Find 16$\frac{2}{3}$% of $360. 12$\frac{1}{2}$% of $560. 50% of $360.

19. How many cubic inches are there in a block of wood 2 feet long and 10 inches square at the ends?

LESSON 29

1. $8\frac{5}{6} + 7\frac{3}{4} + 5\frac{7}{8}$. **2.** $572 \div .07\frac{1}{3}$. **3.** $9\frac{1}{2} - 4\frac{2}{3} - 2\frac{4}{5}$.
4. $5\frac{1}{2} \times 3\frac{2}{3} + 7\frac{4}{9}$. **5.** $705 \div .15\frac{2}{3}$. **6.** $8\frac{3}{4} + 5\frac{2}{3} \times 3\frac{1}{2}$.

7. At $6.40 a ton, how much coal will cost $53.28?

8. The perimeter of a square field is 112 rods. How many acres does it contain?

9. Find the value of 9280 pounds of hay at $15 a ton. At $17 a ton. At $18.50 a ton.

10. A man bought a coat for $24, which was 15% of his money. How much did he have left?

11. If a man receives $1.50 for .6 of a day's work, what will he receive, if he works 8.4 days?

12. A merchant received $33.75 for 5 eighths of a piece of silk at $1.35 a yard. How many yards were left?

LESSON 30

1. $8\frac{2}{3} + 4\frac{3}{4} \times 15$. **2.** $425 \times 15\frac{3}{4}$. **3.** $9\frac{2}{5} \times 4\frac{2}{3} - 7\frac{1}{2}$.
4. $4\frac{1}{5} \times 4\frac{2}{7} \times 25$. **5.** $617 \times 24\frac{3}{5}$. **6.** $8\frac{1}{4} - 2\frac{2}{7} \times 2\frac{1}{3}$.

7. Find the difference between .00783 and .0231.

8. At $9.75 per M, what is the cost of 16,780 brick?

9. If the divisor and quotient are each 476, and the remainder 209, what is the dividend?

10. How many cubic inches are there in a piece of slate four feet square and two inches thick?

11. A man receives a salary of $1800. If he spends 65% of it, how much does he save in seven years?

12. A merchant buys gloves at $1.25 a pair and sells them at a profit of 20%. Find the gain on 96 pairs.

13. In selling 90 yd. of silk that cost $1.10 a yard, a man gained $49.50. Find the selling price per yard.

1. A farm of 56 acres was sold at $375 per acre. What was received for it?

2. Compare a 4-inch square with a rectangle 1′ by 8″.

3. How many pies will it take to give 1 sixth of a pie to each of 50 children?

4. Find .8 of a mile. Find .8 of an acre.

5. How many square feet are there in a sidewalk 25 yards long and 4 feet wide?

6. At $20 a ton, what will 9425 pounds of hay cost?

7. A man bought a watch for $70, which was 35% of his money. How much did he have left?

8. Find 2% of $350. 3% of $1500. 5% of $340.

9. A grocer sold sugar at 6 cents a pound for ninety dollars. How many pounds did he sell?

10. Express as common fractions: .22, .28, .45, .065, .072.

11. A merchant sold $7\frac{3}{4}$ yards of silk to each of 6 ladies. How many yards did he sell to all?

12. $9 \times 7\frac{1}{2}$. $8 \times 5\frac{2}{3}$. $9 \times 6\frac{2}{3}$. $9 \times 3\frac{4}{5}$.

13. A man received $64 for 8 ninths of his berries at 10 cents a quart. How many quarts did he keep?

14. Find .08 of a mile. Find .08 of an acre.

15. At the rate of 2 quarts for 25 cents, how much will a grocer receive for 96 quarts of berries?

16. Find 1% of $448. $\frac{1}{2}$% of $2400. $\frac{1}{3}$% of $450.

17. At 65 cents a bushel, what is the value of 3 loads of potatoes, if the average weight is 1 ton?

18. Express as common fractions: .32, .34, .36, .085, .088.

19. A field is 25 rods square. How many rods of fence will enclose it and divide it into 4 squares?

LESSON 31

1. $6\frac{2}{3} \div 2\frac{7}{9}$. **2.** $4\frac{1}{4} + 5\frac{2}{3} - 2\frac{5}{6}$. **3.** $4\frac{1}{6} \div 3\frac{1}{3}$.

4. $6\frac{2}{7} \div 2\frac{3}{4}$. **5.** $8\frac{7}{8} - 3\frac{3}{4} + 6\frac{4}{5}$. **6.** $9\frac{1}{3} \div 2\frac{1}{3}$.

7. Find $62\frac{1}{2}\%$ of \$656. $30\frac{1}{3}\%$ of \$759. 25% of 1484.

8. If .7 of a pile of wood is worth \$22.75, what is the value of 7 such piles?

9. The quotient is 5486. What will the quotient be, if the divisor is divided by 8?

10. A man sold 15% of his sheep at \$4.50 a head for \$121.50. How many did he have left?

11. A farm of 75 acres was sold for \$6375 at a loss of $\frac{2}{19}$ of the cost. Find the cost per acre.

12. How many 2-inch cubes are there in a block of granite 4 yards long, 3 feet wide, and 2 feet thick?

LESSON 32

1. $5\frac{2}{3} \times 3\frac{3}{4} - 7\frac{2}{3}$. **2.** $9\frac{3}{8} \div 3\frac{3}{4}$. **3.** $8\frac{2}{7} \div 3\frac{5}{8} + 5\frac{1}{2}$.

4. $7\frac{3}{4} + 8\frac{2}{3} \times 3\frac{3}{5}$. **5.** $4\frac{3}{4} \div 2\frac{1}{2}$. **6.** $8\frac{3}{4} - 7\frac{1}{5} \div 2\frac{4}{7}$.

7. At \$17.50 a ton, how much hay will cost \$185?

8. Find $37\frac{1}{2}\%$ of 1952. $20\frac{5}{6}\%$ of 4800. $3\frac{1}{3}\%$ of \$1656.

9. The quotient is 7664. What will the quotient be, if the divisor is multiplied by 8?

10. A rectangular field 32 rods wide has a perimeter of 138 rods. Find the value at \$85 an acre.

11. At \$1.35 a rod, what is the expense of building a fence on both sides of a road 1 fifth of a mile long?

12. A farmer sold 250 bushels of corn at 65 cents a bushel, 300 bushels of oats at 45 cents a bushel, and some wheat at 85 cents a bushel, receiving \$501.50 for all the grain. How many bushels of wheat did he sell?

1. How many pounds of tea will it take to put up 60 packages of ⅛ pound each?

2. Express as common fractions: .38, .48, .42, .65, .46.

3. If a family use 2 quarts of milk a day, in how many days do they use 14½ gallons?

4. Find .9 of a mile. Find .9 of an acre.

5. A man bought a coat for $18, which was 1 fourth of his money. He had — dollars left.

6. 2 rods are — yards. 4 rods are — yards.

7. How many cords are there in a pile of wood 40 feet long and 8 feet square at the ends?

8. $1.80 ÷ $.03. $4 ÷ $.04. $5.40 ÷ $.05.

9. A man bought land for $6000 and sold it at a profit of 25%. What did he receive for it?

10. Find 1% of $1065. ½% of $360. ¼% of $2400.

11. If a man receives $1.50 for .6 of a day's work, what will he receive, if he works 4 days?

12. Find .09 of a mile. Find .09 of an acre.

13. After a man had spent 75% of his salary he had $450 left. Find the amount of his salary.

14. Express as common fractions: .26, .44, .55, .095, .096.

15. At $1.50 a rod, what does it cost to build a fence around a square field 15 rods on each side?

16. Find 10% of $1045. 16⅔% of $180. 25% of $1600.

17. If it takes 1 ninth of a boy's money to buy a ball, how many could he buy for ⅔ of his money?

18. At $16 a ton, how many pounds of hay cost $200?

19. The quotient is 96. What will the quotient be, if both dividend and divisor are divided by 12?

LESSON 33

1. $38\frac{3}{4} \times 48$. 2. $5\frac{2}{5} \times 3\frac{1}{3} \div 3\frac{5}{8}$. 3. $14 \div 1\frac{3}{5}$.
4. $45\frac{6}{7} \times 36$. 5. $7\frac{1}{2} \times 1\frac{2}{3} \div 5\frac{5}{8}$. 6. $20 \div 3\frac{3}{4}$.

7. Find the difference between .00843 and .0216.

8. Find the common prime factors of 1375 and 3321.

9. At $9.75 per M, how much will 17,480 brick cost?

10. A man sold land for $8400 and gained 3 fourths as much as it cost. Find the cost.

11. A lady spent 38% of her money for a cloak that cost $95. How much money did she have left?

12. At 38 cents a bushel, what is the value of 7 loads of oats, if the average weight is 1760 pounds?

13. A merchant paid $210 for 3 pieces of velvet at $1.75 a yard. Find the number of yards in each piece.

LESSON 34

1. $245\frac{3}{5} \times 56$. 2. $3\frac{1}{9} \div 4\frac{2}{3} + 6\frac{1}{3}$. 3. $46 \times 30\frac{3}{4}$.
4. $627\frac{5}{8} \times 72$. 5. $7\frac{1}{2} \times 5\frac{2}{3} \div 2\frac{3}{8}$. 6. $75 \times 40\frac{7}{8}$.

7. Find $30\frac{2}{3}\%$ of $684. $33\frac{1}{3}\%$ of $849. $7\frac{1}{8}\%$ of $724.

8. How many half-inch squares can be cut from a sheet of paper 2 feet long and 18 inches wide?

9. A merchant gained $80 on 125 yards of silk, which he sold at $2.58 a yard. Find the cost per yard.

10. A farmer sold 8765 pounds of hay at $14.50 a ton, and twice as much at $16.80 a ton. Find the value.

11. A man bought flour for $4976 and sold it for $5909, gaining 75 cents a barrel. Find the cost per barrel.

12. A dealer sold 438 tons of coal at $4.75 a ton, and a number of tons of another kind at $5.20 a ton, receiving $4264.50 for all of it. How many tons did he sell?

1. If a man sells 45% of his sheep, what per cent of his flock has he left?

2. $\frac{4}{5} \times 8$. $8\frac{2}{3} \times 9$. $\frac{11}{14} \times 7$. $8\frac{7}{9} \times 3$.

3. A boy sold 35 chickens, which was $33\frac{1}{3}\%$ of all he had. How many did he have left?

4. $\$.25 \times 39$. $\$52 \times 25$. $\$2.40 \times 12\frac{1}{2}$. $\$16 \times 12\frac{1}{2}$.

5. At 38 cents a bushel, what is the value of a carload of oats weighing 16 tons?

6. At $10 a ton, what will 6270 pounds of hay cost?

7. If .6 of the value of a piece of silk is $15, what is the value of 9 such pieces?

8. Find 2% of $1225. 4% of $325. 6% of $1500.

9. A farmer raised 550 bushels of wheat on 25 acres. Find the average yield per acre.

10. 8 rods are — yards. 8 rods are — feet.

11. A man sold $\frac{6}{7}$ of his potatoes and had 125 bushels left. How many bushels did he raise?

12. 125 × 48. 375 × 32. 625 × 64. 875 × 56.

13. A grocer paid $100 for flour at $4 a barrel and sold it at $4.50 a barrel. Find the gain.

14. At $20 a ton, what will 2740 pounds of hay cost?

15. If a stationer buys pens at 50 cents a gross and sells them at a cent apiece, what does he gain?

16. Find 10% of $\$1345$. 20% of $\$350$. $33\frac{1}{3}\%$ of $\$1275$.

17. The quotient is 75. What will the quotient be, if both dividend and divisor are multiplied by 5?

18. $\$12.25$ is $33\frac{1}{3}\%$ of what? $\$15$ is $12\frac{1}{2}\%$ of what?

19. A man had some pencils. He sold $\frac{4}{5}$ of them at 3 cents apiece for $\$4.80$. How many did he have left?

LESSON 35

1. $185 \div .07\frac{1}{3}$. **2.** $3\frac{1}{2} \times 4\frac{2}{3} - 5\frac{5}{6}$. **3.** $68 \times 40\frac{3}{7}$.
4. $135 \div .08\frac{5}{6}$. **5.** $8\frac{5}{9} \div 4\frac{2}{3} + 6\frac{1}{3}$. **6.** $85 \times 60\frac{5}{6}$.

7. Find $.10\frac{5}{6}$ of $775. $.20\frac{2}{3}$ of $457. $.30\frac{4}{5}$ of $235.

8. In a school there are 675 pupils, 48% of whom are boys. How many girls are there?

9. At $14.50 a ton, find the cost of 4 loads of hay, if the average weight is 2265 pounds.

10. A man sold 507 bu. of oats and had 22% of his crop left. How many bushels did he have left?

11. If a man can mow .3 of an acre of grass in .2 of a day, how many acres can he mow in 3.6 days?

12. In selling 75 yd. of silk that cost $1.76 a yard, a man gained $33. Find the selling price per yard.

LESSON 36

1. $335 \div .44\frac{2}{3}$. **2.** $7\frac{1}{2} \times 5\frac{2}{3} \div 4\frac{6}{7}$. **3.** $78 \times 30\frac{3}{4}$.
4. $344 \div .35\frac{5}{6}$. **5.** $9\frac{1}{6} - 3\frac{3}{4} - 2\frac{2}{3}$. **6.** $97 \times 50\frac{2}{3}$.

7. At $14 a ton, how many pounds of hay cost $85.75?

8. Find $15\frac{5}{6}\%$ of $382. $20\frac{1}{6}\%$ of $452. $30\frac{2}{3}\%$ of $547.

9. How many 3-inch cubes are there in a stick of timber 28 feet long and 9 by 6 inches?

10. At $3.75 a cord, what is the value of a pile of cordwood 56 feet long and 8 feet high?

11. A man sold 731 bu. of wheat and had 15% of his crop left. How many bushels did he have left?

12. If a man buys 844 sheep at $3.25 a head, for how much must he sell them per head to gain $1055?

13. A man worked 24 days. He spent 3 fifths of his earnings and had $31.20 left. What did he earn per day?

1. At 32 cents a pound, what will 4 pounds 6 ounces of butter cost?

2. \$4.20 ÷ \$.03. \$12.48 ÷ \$.06. \$4.80 ÷ \$.04.

3. A rectangle 40 inches long contains 140 2-inch squares. How wide is it?

4. Find 2% of \$450. 3% of \$550. 5% of \$1500.

5. At the rate of 7 pounds of sugar for 42 cents, what is the cost of 35 pounds?

6. \$.75 × 48. \$.25 × 76. \$64 × 75. \$2.40 × 75.

7. At 65 cents a bushel, what is the value of a load of potatoes weighing 2400 pounds?

8. 8 is 10% of \$15 is $33\frac{1}{3}\%$ of \$16 is 25% of

9. What is the average price of two cows, if one of them costs \$55 and the other \$35?

10. $25 \div \frac{5}{8}$. $9 \div \frac{3}{7}$. $16 \div 1\frac{3}{5}$. $18 \div 1\frac{2}{7}$.

11. A man bought a coat for \$15, which was $12\frac{1}{2}\%$ of his money. How much did he have left?

12. At \$8 a ton, what will 1275 pounds of hay cost?

13. Find the number of cubic feet of air in a room 30 feet long, 22 feet wide, and 10 feet high.

14. Find 1% of \$637. $\frac{1}{2}\%$ of \$1800. $\frac{1}{3}\%$ of \$3600.

15. How many square inches will be cut off in a strip 1 inch wide all around a square yard of paper?

16. 20 is $16\frac{2}{3}\%$ of 15 is $37\frac{1}{2}\%$ of 90 is 75% of

17. Into how many half-inch squares can you cut a piece of paper 10 inches long and $3\frac{1}{2}$ inches wide?

18. At \$10 a ton, what will 2760 pounds of hay cost?

19. If it takes 1 ninth of a boy's money to buy 8 oranges, how many dozen can he buy for $\frac{2}{3}$ of his money?

LESSON 37

1. $5\frac{2}{3} \times 3\frac{1}{5} + 8\frac{3}{5}$. **2.** $26\frac{3}{4} \times 6$. **3.** $6\frac{3}{4} \times 4\frac{1}{2} - 8\frac{3}{4}$.
4. $6\frac{3}{4} + 7\frac{2}{3} + 9\frac{1}{2}$. **5.** $42\frac{2}{3} \times 7$. **6.** $9\frac{5}{6} - 3\frac{1}{3} \times 2\frac{1}{2}$.

7. At $18 per M, how many feet of lumber cost $175?

8. The perimeter of a square field is 144 rods. Find the area in acres.

9. If 1 fifteenth of the value of a crop of corn is $65.75, what is 3 fifths of the value?

10. At the rate of $3.15 for .9 of a day's work, what will a man receive, if he works 7.4 days?

11. A man bought a load of coal at $5.60 a ton, paying $5.25 for it. Find the weight of the load.

12. At $1.35 a rod, what will it cost to enclose a rectangular field 48 rods long and 36 rods wide?

LESSON 38

1. $9\frac{1}{2} - 4\frac{2}{3} \div 5\frac{3}{5}$. **2.** $45\frac{3}{4} \times 7$. **3.** $27\frac{3}{4} \div 6\frac{1}{6} + 1\frac{3}{8}$.
4. $7\frac{3}{4} + 6\frac{2}{3} \div 2\frac{1}{2}$. **5.** $65\frac{2}{7} \times 9$. **6.** $38\frac{3}{4} - 5\frac{1}{2} \times 4\frac{2}{3}$.

7. A man sold a house for $3900 and lost $\frac{1}{7}$ as much as it cost. Find the cost.

8. A grocer bought tea for $175 and sold it at a profit of 24%. Find the sum received for it.

9. A merchant paid $105 for silk at $1.25 a yard and sold it at $1.65 a yard. Find the profit.

10. A farmer sold 9 loads of hay averaging 2165 pounds at $15.50 a ton. What did he receive for it?

11. A dealer bought cheese at $8\frac{3}{4}$ cents a pound, paying $1120 for it. How many pounds did he buy?

12. A man received $546 for $\frac{7}{8}$ of his potatoes at 65 cents a bushel. How many bushels did he have left?

1. If $\frac{3}{7}$ of the value of a piece of silk is $75, what is the value of the piece?

2. Find 1% of $1448. $\frac{1}{2}$% of $430. $\frac{1}{4}$% of $4800.

3. What is the average price of 5 cows, if all of them cost one hundred ninety dollars?

4. $8\frac{1}{4} + 7\frac{3}{4}$. $6\frac{2}{5} + 5\frac{3}{5}$. $9 - 5\frac{1}{2}$. $8\frac{1}{2} - 3\frac{1}{8}$.

5. At the rate of 25 pounds for 70 cents, what is the cost of 225 pounds of flour?

6. 72×125. 56×375. 32×625. 48×875.

7. How many cords are there in a pile of wood 40 feet long and 8 feet square at the ends?

8. $9\frac{3}{4} \div 3$. $12\frac{8}{9} \div 4$. $35\frac{5}{7} \div 5$. $14\frac{1}{2} \div 2$.

9. A man sold a farm for $4200 and lost 1 eighth as much as he paid for it. Find the cost.

10. $9.60 is 10% of $28 is 4% of $180 is 3% of

11. If your mother has $8\frac{2}{3}$ pies, to how many children can she give 1 sixth of a pie each?

12. At $10 a ton, what will 7230 pounds of hay cost?

13. If a grocer sells 3 pounds of rice for 25 cents, how many pounds can be bought for $2.50?

14. $2.40 ÷ $.04. $7 ÷ $.05. $7.20 ÷ $.08.

15. A man paid 30% of his money for each of 3 houses and had $5000 left. Find the cost of each house.

16. Find $12\frac{1}{2}$% of $320. $16\frac{2}{3}$% of $1200. 25% of $460.

17. A field is 20 rods square. How many rods of fence will enclose it and divide into 4 squares?

18. $.25 × 66. $84 × 25. $4.80 × 25. $.75 × 64.

19. A man paid 40% of his money for a horse, 35% for a carriage, and had $150 left. Find the cost of each.

LESSON 39

1. $5\frac{3}{5} \div 1\frac{3}{4} - 2\frac{2}{3}$. **2.** $26 \times 20\frac{2}{3}$. **3.** $6\frac{7}{8} + 3\frac{1}{3} \times 3\frac{3}{4}$.

4. Find the prime factors of 72, 280, 693, and 1625.

5. Find $\frac{3}{4}\%$ of $7560. $\frac{4}{5}\%$ of $9425. $\frac{7}{8}\%$ of 9648.

6. If .65 of a ton of hay is worth $10.92, how much must be paid for 8.75 tons?

7. How many posts are required for a fence 48 rods long, if the posts are set 6 feet apart?

8. The length of a rectangular field is 48 rods, and its perimeter is half a mile. Find the area.

9. A man sold 544 bushels of potatoes, which was .64 of his crop. How many bushels did he have left?

10. A merchant bought flour for $3430 and sold it for $4165, gaining $.75 a barrel. Find the cost per barrel.

LESSON 40

1. $8\frac{1}{6} - 3\frac{2}{3} \times 1\frac{1}{2}$. **2.** $24\frac{3}{4} \times 30$. **3.** $9\frac{5}{6} - 4\frac{3}{4} + 7\frac{1}{2}$.

4. Find the prime factors of 125, 210, 315, and 1872.

5. Find $.15\frac{2}{3}$ of $570. $7\frac{3}{4}\%$ of $840. $20\frac{5}{6}\%$ of $950.

6. $1058 is $.15\frac{1}{3}$ of what? $3104 is $24\frac{1}{4}\%$ of what?

7. If .375 of a yard of silk costs $1.20, how many yards will cost $51.60 at the same price?

8. A man owed a debt. He paid $189.84, which is .28 of what he still owes. Find the amount of the debt.

9. A boy bought peaches at the rate of four for two cents and sold them at the rate of three for five cents, gaining $4.34. How many peaches did he buy?

10. After a farmer had sold .34 of his wheat, he had 495 bushels left. What would he have received for his whole crop, if he had sold it at 85 cents a bushel?

DENOMINATE NUMBERS

A **Simple Number** is a number composed of units of the same kind.

A **Denominate Unit** is a unit of weight or measure.

A **Denominate Number** is a number composed of denominate units.

A **Simple Denominate Number** is a number composed of denominate units of one kind.

A **Compound Denominate Number** is a number composed of denominate units of two or more kinds.

LINEAR MEASURE

12	inches (in.)	= 1 foot	ft.
3	feet	= 1 yard	yd.
5½	yards, or 16½ feet	= 1 rod	rd.
40	rods	= 1 furlong	fur.
320	rods	= 1 mile	mi.

1 mi. = 320 rd. = 1760 yd. = 5280 ft. = 63,360 in.

A *hand*, used in measuring the height of horses, = 4 in. A *knot*, used in measuring distances at sea, = 1.15 mi. A *fathom*, used in measuring the depth of the sea, = 6 ft.

SURFACE MEASURE

144	square inches (sq. in.)	= 1 square foot	sq. ft.
9	square feet	= 1 square yard	sq. yd.
30¼	sq. yd., or 272¼ sq. ft.	= 1 square rod	sq. rd.
160	square rods	= 1 acre	A.
640	acres	= 1 square mile	sq. mi.

1 A. = 160 sq. rd. = 4840 sq. yd. = 43,560 sq. ft.

A **Section** of land is a square mile.

Roofing, flooring, and slating are often estimated by the *square*, which contains 100 square feet.

SURVEYORS' MEASURE

In measuring land, surveyors use a chain (ch.) which contains 100 links (l.) and is 4 rods long. Since the chain is 4 rods long, a square chain contains 16 sq. rd., and 10 sq. ch. = 160 sq. rd., or 1 acre.

VOLUME MEASURE

1728 cubic inches (cu. in.) = 1 cubic foot . . . cu. ft.
27 cubic feet . . . . = 1 cubic yard . . . cu. yd.
128 cubic feet . . . . = 1 cord . . . . . . cd.

NOTE. — In computing the contents of an enclosing wall, masons and brick-layers regard it as one straight wall whose length is the distance around it on the outside. Corners are thus measured twice.

MEASURES OF CAPACITY

LIQUID MEASURE		DRY MEASURE	
4 gills = 1 pint . . .	pt.	2 pints = 1 quart	qt.
2 pints = 1 quart . .	qt.	8 quarts = 1 peck . .	pk.
4 quarts = 1 gallon . .	gal.	4 pecks = 1 bushel .	bu.

The *standard gallon* contains 231 cubic inches.

The *standard bushel* contains 2150.42 cubic inches.

The capacity of cisterns, reservoirs, etc., is often expressed in barrels (bbl.) of 31½ gallons each, or in hogsheads (hhd.) of 63 gallons each. In commerce, these vary in size.

AVOIRDUPOIS WEIGHT

16 ounces (oz.) . = 1 pound . . . . lb.
100 pounds . . . = hundredweight . cwt.
2000 pounds . . . = 1 ton . . . . . T.

One pound Avoirdupois = 7000 grains.

The *long ton* of 2240 pounds is used in the United States Custom Houses, and in weighing coal and iron at the mines.

STANDARD WEIGHTS

1 bushel of wheat = 60 lb.
1 bushel of corn = 56 lb.
1 bushel of oats = 32 lb.
1 bushel of barley = 48 lb.
1 bushel of potatoes = 60 lb.
1 barrel of flour = 196 lb.
1 barrel of pork = 200 lb.
1 keg of nails = 100 lb.

TROY WEIGHT

24 grains (gr.) . . = 1 pennyweight . pwt.
20 pennyweights . . = 1 ounce . . . oz.
12 ounces . . . . . = 1 pound . . . lb.

One pound Troy = 5760 grains.

APOTHECARIES' WEIGHT

60 grains (gr.) . . = 1 dram . . dr., or ʒ.
8 drams . . . . . = 1 ounce . oz., or ℥.
12 ounces . . . . . = 1 pound . lb., or ℔.

One pound Apothecaries' weight = 5760 grains.

UNITED STATES MONEY

10 mills = 1 cent.
10 cents = 1 dime.
10 dimes = 1 dollar.
10 dollars = 1 eagle.

BRITISH OR STERLING MONEY

4 farthings . . = 1 penny . . . *d.*
12 pence . . . = 1 shilling . . *s.*
20 shillings . . = 1 pound . . £.
5 shillings . . = 1 crown.

The value of £1 is $4.8665 in United States gold coin.

The unit of French money is 1 franc, which is 19.3 cents. The unit of German money is 1 mark, which is 23.85 cents.

Reduction Descending is the process of changing a denominate number to units of a lower denomination.

Reduce 3 mi. 135 rd. 4 yd. 2 ft. 7 in. to inches.

320 rd.	5½ yd.	3 ft.	12 in.
3	1095	6026½	18081½
960	547½	1½	6
135	5475	18078	216972
1095 rd.	4	2	7
	6026½ yd.	18081½ ft.	216985 in.

1 mi. = 320 rd.
1 rd. = 5½ yd.
1 yd. = 3 ft.
1 ft. = 12 in.

3 mi. 135 rd. = 1095 rd.
1095 rd. 4 yd. = 6026½ yd.
6026½ yd. 2 ft. = 18081½ ft.
18081½ ft. 7 in. = 216985 in.

LESSON 41

Reduce the following to the lowest denomination named:

1. 8 bu. 3 pk. 7 qt.
2. 2 mi. 6 rd. 2 yd. 1 ft. 8 in.
3. 9 gal. 3 qt. 1 pt.
4. 4 A. 120 sq. rd. 25 sq. yd.
5. 4 rd. 8 ft. 7 in.
6. 3 mi. 7 rd. 4 yd. 2 ft. 9 in.
7. 6 lb. 9 oz. 8 pwt.
8. 8 A. 140 sq. rd. 165 sq. ft.

9. 5 rd. 4 yd. 2 ft.

10. 4 mi. 8 rd. 3 yd. 1 ft. 5 in.

11. 5 lb. 7 oz. 6 gr.

12. 6 A. 134 sq. rd. 18 sq. yd.

13. 4 sq. rd. 8 sq. yd.

14. 5 mi. 9 rd. 4 yd. 2 ft. 7 in.

15. 9 lb. 8 oz. 7 gr.

16. 8 A. 146 sq. rd. 185 sq. ft.

17. 8 sq. rd. 9 sq. in.

18. 6 mi. 5 rd. 2 yd. 1 ft. 4 in.

19. 6 oz. 9 pwt. 8 gr.

20. 3 A. 117 sq. rd. 215 sq. ft.

21. 9 bu. 3 pk. 7 qt.

22. 1 mi. 7 rd. 3 yd. 2 ft. 5 in.

23. 3 gal. 3 qt. 3 gi.

24. 2 A. 153 sq. rd. 27 sq. yd.

REDUCTION OF DENOMINATE FRACTIONS

A **Denominate Fraction** is a fraction of a denominate unit. It may be a common fraction or decimal.

$\frac{5}{7}$ mi. .235 A. $\frac{5}{8}$ bu. .625 T. $\frac{5}{6}$ rd.

Reduce $\frac{2}{7}$ of a mile to lower denominations.

$$\begin{array}{l}
\frac{2}{7} \text{ mi.} = \frac{2}{7} \text{ of } 320 \text{ rd.} = \frac{640}{7} \text{ rd.} = 91\frac{3}{7} \text{ rd.} \\
\frac{3}{7} \text{ rd.} = \frac{3}{7} \text{ of } \frac{11}{2} \text{ yd.} = \frac{33}{14} \text{ yd.} = 2\frac{5}{14} \text{ yd.} \\
\frac{5}{14} \text{ yd.} = \frac{5}{14} \text{ of } 3 \text{ ft.} = \frac{15}{14} \text{ ft.} = 1\frac{1}{14} \text{ ft.} \\
\frac{1}{14} \text{ ft.} = \frac{1}{14} \text{ of } 12 \text{ in.} = \frac{6}{7} \text{ in.}
\end{array}$$

Ans. 91 rd. 2 yd. 1 ft. $\frac{6}{7}$ in.

Reduce .56 of an acre to lower denominations.

$$\begin{array}{rrrr}
160 \text{ sq. rd.} & & & 144 \text{ sq. in.} \\
\underline{.56} & & & \underline{.35} \\
9.60 & 30.25 \text{ sq. yd.} & 9 \text{ sq. ft.} & 7.20 \\
\underline{80.0} & \underline{.6} & \underline{.15} & \underline{43.2} \\
89.6 \text{ sq. rd.} & 18.150 \text{ sq. yd.} & 1.35 \text{ sq. ft.} & 50.4 \text{ sq. in.}
\end{array}$$

Ans. 89 sq. rd. 18 sq. yd. 1 sq. ft. 50.4 sq. in.

LESSON 42

Find the value of the following in lower denominations:

1. $\frac{5}{6}$ mi. **2.** .37 mi. **3.** $\frac{3}{7}$ sq. mi. **4.** .23 sq. mi.

5. $\frac{5}{7}$ mi. **6.** .49 mi. **7.** $\frac{5}{9}$ sq. mi. **8.** .33 sq. mi.

9. $\frac{5}{9}$ mi. **10.** .53 mi. **11.** $\frac{6}{7}$ sq. mi. **12.** .47 sq. mi.

13. $1974-(143-78)-(96+\overline{13\times 15}\div 5-13\times 7)$.

14. At $5.80 a ton, what will 4785 pounds of coal cost?

15. Reduce 9 sq. rd. 15 sq. yd. 7 sq. ft. to square feet.

16. Find $7\frac{1}{2}\%$ of $984. $10\frac{1}{3}\%$ of 756. $33\frac{1}{3}\%$ of 8457.

17. At 18 cents a half-peck, for how many bushels of onions will a grocer receive $12.96?

18. A man sold berries at $6\frac{3}{4}$ cents a quart, receiving $108 for them. How many quarts did he sell?

LESSON 43

Find the value of the following in lower denominations:

1. $\frac{7}{9}$ mi. **2.** .66 mi. **3.** $\frac{6}{7}$ A. **4.** .57 sq. mi.

5. $\frac{4}{7}$ gal. **6.** .73 mi. **7.** $\frac{5}{6}$ A. **8.** .77 sq. mi.

9. $\frac{5}{9}$ gal. **10.** .81 mi. **11.** $\frac{7}{9}$ A. **12.** .89 sq. mi.

13. Reduce 8 rd. 3 yd. 2 ft. 9 in. to inches.

14. A dealer sold sugar at $5\frac{3}{4}$ cents a pound for $736. How many pounds did he sell?

15. If .375 of a barrel of flour is worth $1.80, what will a grocer receive for 8.75 barrels?

16. How many dozen eggs, at 20 cents a dozen, will pay for 480 pounds of sugar at 6 cents a pound?

17. A man sold 1 ninth of a piece of land for $975. At the same price, what was half the remainder worth?

1. At 4 cents a foot, what will 50 yards of rope cost?
2. Multiply $.25 by 48, 52, 32, 76, 64, 72, 160.
3. Find 1% of $564. ½% of $1680. ⅓% of $480.
4. 72 × 250. 56 × 750. 64 × 375. 48 × 625.
5. ⅙ of a yard is 50% of ⅛ of a foot is 20% of
6. $6.15 ÷ $.03. $9 ÷ $.04. $10.25 ÷ $.05.
7. $60 is 12½% of $120 is 25% of $150 is 33⅓% of
8. At $1.75 a yard, how many yards of silk cost $490?
9. 32 in. are — ft. — in. 46 qt. are — pk. — qt.
10. Find 2% of $1440. 4% of $425. 5% of $420.
11. 50 oz. are — lb. — oz. 26 ft. are — yd. — ft.
12. $.96 × 12½. $5.60 × 37½. $64 × 62½.
13. 38 ft. are — rd. — ft. 28 yd. are — rd. — yd.
14. Multiply $.12½ by 12, 18, 26, 34, 20, 28, 36.

Reduction Ascending is the process of changing a denominate number to units of higher denominations.

Reduce 242,349 inches to higher denominations.

12	242349 in.	
3	20195 ft.	+ 9 in.
5½	6731 yd.	+ 2 ft.
	2	
11	13462	
320	1223 rd.	+ $\frac{9}{2}$ yd.
	3 mi.	+ 263 rd.

3 mi. 263 rd. 4 yd. 1 ft. 6 in.
2 ft. 9 in.

Ans. 3 mi. 263 rd. 5 yd. 1 ft. 3 in

LESSON 44

Reduce the following to higher denominations:

1. 297,439 in. 2. 765 pwt. 3. 54,759 sq. ft.
4. 325,725 in. 5. 913 pwt. 6. 84,175 sq. ft.

7. Find the greatest common factor of 1260 and 1815.

8. $876 + 94 \times 16 - (\overline{72 \times 19} \div 9 + 9 \times \overline{144 \div 8} - 175)$.

9. Reduce 23,673 sq. in. to higher denominations.

10. Find the cost of 18,755 feet of lumber at $ 28 per M.

11. How far can a man travel in 48 days at the rate of 116 miles in 8 days?

12. A speculator sold wool at 20¾ cents a pound, receiving $ 2988 for it. How many pounds did he sell?

13. A merchant bought 250 yards of silk at $1.60 a yard and sold it at a profit of 15%. Find the sum received.

LESSON 45

Reduce the following to higher denominations:

1. 418,257 in. 2. 567 pwt. 3. 49,684 sq. ft.
4. 672,493 in. 5. 824 pwt. 6. 75,817 sq. ft.

7. Find the value of 985 pounds of hay at $ 18 a ton.

8. Reduce 5 ninths of an acre to lower denominations.

9. Reduce .89 of a Troy pound to lower denominations.

10. How many feet of lumber, at $18.50 a thousand feet, can be bought for $ 174.64?

11. A man sold 4 loads of hay at $ 15 a ton for $ 55.50. Find the average weight of the loads.

12. If a man receives $ 2.10 for .6 of a day's work, how much money will he earn, if he works 18.4 days?

13. A man sold land for $ 8750 and lost $ 850. What would he have received, if he had gained $ 750?

1. At ten cents a quart, what is the value of three bushels of nuts?

2. $.48 × 25. $.28 × 75. $36 × 75. $3.60 × 75.

3. A farmer sold 3 calves at $7 apiece and 1 for $11. Find the average price.

4. At $12 a ton, what will 2150 pounds of hay cost?

5. At thirty dollars a month, how much rent shall I pay in one year and eight months?

6. Find 1% of $1835. ⅓% of $2400. ¼% of $600.

7. A man paid $250 for a horse and had ⅗ of his money left. How much did he have left?

8. 5½ + 3⅔. 9⅓ − 5¼. 4⅔ × ¾. 21 ÷ 2⅓.

9. If 3½ cords of wood cost $14, what will half a cord cost? What will 8 cords cost?

10. $25 is 16⅔% of $15 is 12½% of $120 is 20% of

11. If a man walks at a uniform rate of 3⅗ miles per hour, how far can he walk in 8⅓ hours?

12. At $10 a ton, what will 3780 pounds of hay cost?

13. A grocer sold 18¾ barrels of potatoes $2⅖ per barrel. What did he receive for them?

14. Find 12½% of $1600. 16⅔% of $240. 25% of $2400.

15. A man paid $1.64 for beef, which he bought at 16 cents a pound. How many pounds did he buy?

16. $.72 × 25. $.64 × 75. $48 × 75. $4.80 × 75.

17. A man sold a house for $4800 and lost ¼ as much as it cost. How much did he pay for the house?

18. ½ of 18 in. is 25% of ⅔ of a foot is 16⅔% of

19. A farmer sold ⅗ of his wheat at $.75 a bushel, receiving $360 for it. How many bushels had he left?

LESSON 46

1. Reduce .975 of a bushel to lower denominations.

2. Reduce $\frac{2}{9}$ of a square mile to lower denominations.

3. Reduce 4 sevenths of a mile to lower denominations.

4. Reduce 4 cu. yd. 18 cu. ft. 400 cu. in. to cu. in.

5. Find $4\frac{1}{3}\%$ of \$750. $10\frac{1}{3}\%$ of \$486. $66\frac{2}{3}\%$ of 8460.

6. Add .948, $4\frac{3}{8}$, $.6\frac{2}{3}$, $8\frac{3}{4}$, .777, $4\frac{1}{3}$, and 647.85, and express the sum in words.

7. A man bought books for \$194 and sold them at a gain of 32%. What did he receive for them?

8. How many pounds of tea, at 55 cents a pound, will pay for 110 dozen eggs at 24 cents a dozen?

9. A man received \$210 for his berries, which he sold at $8\frac{3}{4}$ cents a quart. How many quarts did he raise?

LESSON 47

1. $8\frac{1}{2}+7\frac{2}{3}-5\frac{3}{4}$. 2. $45\times 20\frac{3}{4}$. 3. $8\frac{7}{8}+5\frac{2}{5}\times 4\frac{1}{6}$.

4. $4\frac{5}{6}-2\frac{8}{9}+6\frac{2}{3}$. 5. $64\times 30\frac{4}{5}$. 6. $9\frac{1}{4}-7\frac{7}{8}\div 4\frac{1}{5}$.

7. $8\frac{1}{2}-9\frac{3}{8}\div 2\frac{5}{8}$. 8. $75\times 40\frac{2}{3}$. 9. $9\frac{1}{6}-\overline{8\frac{3}{4}-5\frac{2}{3}}$.

10. Reduce 218,746 inches to higher denominations.

11. Reduce 27,584 square feet to higher denominations.

12. Find the cost of 1870 lb. of sugar at \$4.85 per C.

13. The perimeter of a rectangular field is 164 rods. If it is 48 rods long, how wide is it?

14. A dealer paid \$90 for apples at \$1.20 a barrel and sold them at \$1.65 a barrel. Find his profit.

15. A farmer sold 15 loads of potatoes averaging 2280 pounds at 45 cents a bushel. Find the value of them.

16. A merchant bought hats at \$9 a dozen and sold them at a profit of 20%. What did he receive for each?

1. A man sold 35 sheep, which was 25% of his flock. How many did he have left?

2. 48 × 750. 56 × 375. 64 × 625. 72 × 875.

3. A man sold a farm of 96 acres at $125 an acre. How much did he receive for it?

4. Find 3% of $450. 4% of $2500. 6% of $350.

5. How many cords are there in a pile of wood 16 feet long, 12 feet wide, and 8 feet high?

6. $1200 is 12½% of what? $250 is 16⅔% of what?

7. A square field is 32 rods on each side. Give the perimeter and the number of acres it contains.

8. Multiply $.25 by 14, 19, 21, 34, 27, 45, 63, 75.

9. At 25 cents a square yard, what will it cost to plaster a ceiling 18 feet long and 14 feet wide?

10. Find 10% of $1250. 20% of $450. 33⅓% of $1545.

11. At 85 cents a bushel, what is the value of three loads of wheat, the average weight being one ton?

12. At $10 a ton, what will 4740 pounds of hay cost?

13. If a carpenter receives $1.50 for .4 of a day's work, how much should he receive, if he works 8 days?

COMPOUND ADDITION AND SUBTRACTION

rd.	yd.	ft.	in.
46	3	1	8
68	2	2	5
85	4	1	7
200	4½	2	8
	½ =	1	6
200	5	1	2

rd.	yd.	ft.	in.
83	2	2	6
26	4	1	8
56	3½	0	10
	½ =	1	6
56	3	2	4

LESSON 48

1. $6\frac{2}{3} + 8\frac{1}{2} + 9\frac{3}{4}$. **2.** $47 \times 20\frac{2}{3}$. **3.** $9\frac{3}{4} - 2\frac{2}{3} \times 2\frac{1}{2}$.

4. $9\frac{5}{6} + 5\frac{3}{7} \times 4\frac{2}{3}$. **5.** $55 \times 30\frac{3}{4}$. **6.** $8\frac{3}{4} \div 2\frac{5}{8} - 1\frac{5}{6}$.

7. Reduce 85,285 square feet to higher denominations.

8. From 8 mi. 75 rd. 2 ft. subtract 98 rd. 3 yd. 9 in.

9. Add 8 gal. 3 qt. 1 pt. 3 gi., 4 gal. 2 qt. 2 gi., 7 gal. 1 qt. 1 pt., and 6 gal. 1 pt. 3 gi.

10. Add 3 mi. 284 rd. 4 yd. 2 ft., 2 mi. 57 rd. 3 yd. 8 in., and 4 mi. 96 rd. 1 yd. 1 ft. 6 in.

11. At $8.50 a ton, what will a man receive for three loads of straw, if the average weight is 1975 pounds?

12. Add 8 A. 86 sq. rd. 28 sq. yd. 8 sq. ft. 125 sq. in., 5 A. 94 sq. rd. 26 sq. yd. 7 sq. ft. 116 sq. in., and 6 A. 78 sq. rd. 27 sq. yd. 6 sq. ft. 105 sq. in.

LESSON 49

1. $416 \div .08\frac{2}{3}$. **2.** $2875 \div .20\frac{5}{6}$. **3.** $768 \div .09\frac{1}{7}$.

4. What are the prime factors of 1197 and 2275?

5. At $6.50 a ton, how many pounds of coal cost $9.10?

6. Reduce $\frac{5}{7}$ of a square mile to lower denominations.

7. Add $9.64\frac{2}{3}$, 486, 75.38, $7\frac{7}{8}$, 78.432, $9\frac{4}{5}$, and $246\frac{1}{3}$.

8. Add .87 mi., .48 rd., .26 yd., .45 ft., and .15 in.

9. From 9 mi. 35 rd. 1 ft. subtract 78 rd. 2 yd. 6 in.

10. Six men bought 1240 acres of land at $16 an acre and sold it for $34,720. Find each man's gain.

11. Add 6 A. 75 sq. rd. 26 sq. yd. 6 sq. ft. 135 sq. in., 67 sq. rd. 18 sq. yd. 8 sq. ft., 8 A. 35 sq. rd. 28 sq. yd. 126 sq. in., and 94 sq. rd. 7 sq. ft. 110 sq. in.

1. At $3.75 a pair, what will a merchant receive for 56 pairs of shoes?

2. 72×125. 64×375. 56×625. 48×875.

3. How many acres are there in a rectangular field 20 rods long and 16 rods wide?

4. Find 1% of $785. $\frac{1}{2}$% of $1460. $\frac{1}{8}$% of $2480.

5. A merchant sold $8\frac{1}{2}$ yards of silk to each of 6 ladies. How many yards did all buy?

6. Multiply $.50 by 28, 55, 38, 73, 94, 26, 138.

7. If a horse eats 8 quarts of oats a day, how many days will $15\frac{1}{2}$ bushels last him?

8. $6\frac{1}{2} + 3\frac{1}{6}$. $9\frac{1}{3} - 6\frac{1}{5}$. $3\frac{3}{5} \times 1\frac{2}{3}$. $5\frac{1}{7} \div \frac{9}{14}$.

9. At 30 cents a peck, for how many bushels of apples will a man receive twelve dollars?

10. $450 is 15% of what? $240 is 12% of what?

11. At $1.50 a rod, what is the cost of enclosing a garden 13 rods long and 12 rods wide?

12. Find 2% of $550. 4% of $525. 5% of $1600.

13. A man bought a horse for $150, which was 25% of his money. How much money did he have left?

COMPOUND MULTIPLICATION AND DIVISION

rd.	yd.	ft.	in.
35	4	1	8
			7
250	$3\frac{1}{2}$	2	8
	$\frac{1}{2}$	= 1	6
250	4	1	2

rd.	yd.	ft.	in.
8)75	4	1	2
9	2	1	10

mi.	rd.	ft.	in.
6)43	7	2	6
7	54	8	8

LESSON 50

1. Multiply 6 miles 35 rods 4 yards 2 feet 8 inches by 7.

2. Multiply 5 A. 75 sq. rd. 27 sq. yd. 7 sq. ft. by 9.

3. Divide 17 miles 29 rods 3 yards 1 foot 9 inches by 5.

4. Divide 25 A. 85 sq. rd. 19 sq. yd. 5 sq. ft. by 6.

5. Divide 42 × 18 × 65 × 11 × 70 by 35 × 45 × 13.

6. Find the smallest number that is exactly divisible by 34, 51, 65, and 117.

7. If 3 fifths of a piece of silk is worth $48.75, how much is the other part worth?

8. At $1.45 a rod, what will it cost to enclose a square field eighty-six rods on each side?

9. How many pounds of tea, at 65 cents a pound, will pay for 130 dozen eggs at 18 cents a dozen?

LESSON 51

1. Multiply 9 miles 85 rods 3 yards 2 feet 7 inches by 9.

2. Divide 35 A. 93 sq. rd. 23 sq. yd. 8 sq. ft. by 8.

3. At $3.85 a cord, what is the value of a cubical pile of wood 12 feet high?

4. A man bought a load of hay at $15 a ton, paying $13.50 for it. Find the weight.

5. A man bought 80 sheep at $3.75 a head and 70 at $3 a head. Find the average price paid.

6. If a carpenter receives $1.10 for .4 of a day's work, how much will he receive, if he works 8.6 days?

7. What is the length of the shortest piece of wire that can be cut into pieces 16, 18, or 22 feet long?

8. How much is received for a section of land bought at $8 an acre and sold at a profit of 45 per cent?

1. If 2 horses eat 24 quarts of oats a day, how many bushels will last them 64 days?

2. $.25 × 38. $.25 × 35. $.25 × 58. $.25 × 63.

3. How many pounds of sugar, at 6 cents a pound, will pay for 30 pounds of butter at 25 cents a pound?

4. $.75 × 24. $.75 × 36. $.75 × 48. $.75 × 64.

SURFACE MEASUREMENTS

The **Dimensions** of a rectangle are its length and width.

The **Area** of any surface is the number of square units that it contains.

Surfaces are therefore measured in squares, larger or smaller, according as the surface measured is large or small. Many examples have already been given in this book and the two that precede it, in which pupils have been required to find the area of squares and rectangles by multiplying the number of squares in a row by the number of rows. The number of squares in a row is the same as the number of linear units in the length, and the number of rows is the same as the number of linear units in the width. For this reason, we generally say that we *multiply the length by the width. It must be remembered, however, that the multiplicand stands for the number of square units in a row.*

Pupils must also bear in mind that in finding the area of a rectangle the dimensions must be expressed in the same unit. That is, if one dimension is given in feet and the other in inches, the former must be reduced to inches or the latter to feet; if one dimension is given in yards and the other in feet, the former must be reduced to feet or the latter to yards.

LESSON 52

1. Multiply 8 miles 68 rods 2 yards 1 foot 5 inches by 8.

2. Reduce 276,427 square feet to higher denominations.

3. $246 \times 8 - 169 \div 13 + 743 - (225 \div 15) \times 16 + 475$.

4. Add .478, $85.69\frac{2}{3}$, $8\frac{7}{8}$, 97.85, $7.4\frac{1}{3}$, $47.8\frac{4}{5}$, and $59\frac{5}{8}$.

5. At $8.40 per M, how many brick are worth $77.70?

6. How many square yards are there in a lawn 342 feet long and 288 feet wide?

7. A man sold 85% of his wheat and had 126 bushels left. How many bushels did he sell?

8. A rectangular field 56 rods long has a perimeter of 192 rods. How many acres does it contain?

9. A man bought land at $12 an acre, paying $5160 for it, and sold it at $17 an acre. Find his profit.

LESSON 53

1. $5\frac{3}{5} \times 3\frac{4}{7} \div 4\frac{4}{9}$. **2.** $45 \times 30\frac{5}{6}$. **3.** $6\frac{1}{4} \times 3\frac{3}{8} \div 9\frac{3}{8}$.

4. $9\frac{1}{2} - \overline{7\frac{1}{3} - 2\frac{5}{6}}$. **5.** $86 \times 50\frac{4}{7}$. **6.** $9\frac{7}{8} - \overline{8\frac{1}{6} - 5\frac{3}{4}}$.

7. Divide 27 miles 87 rods 2 yards 2 feet 8 inches by 7.

8. A rectangular field 8.4 chains wide contains 15.33 acres. How long is the field?

9. A sidewalk 4 feet wide contains 132 square yards. Find the length of the walk in rods.

10. A rectangular piece of paper 4 feet wide contains 6480 2-inch squares. Find the length in yards.

11. A dealer bought 220 long tons of coal at $4.48 a ton and sold it at $5.25 a short ton. Find his profit.

12. A field is 36 rods square. At $.85 a rod, what will it cost to enclose it and divide it into 4 squares?

A pan 11″ by 7″ by 3″ holds a gallon. Tanks or pans whose dimensions in inches are exactly divisible by these three numbers hold an exact number of gallons, and the number is the product of the three quotients obtained by dividing the dimensions by these three numbers.

1. Find the capacity of tanks: 22 in. by 14 in. by 12 in. 28″ by 22″ by 15″. 14″ × 12″ × 11″.

2. $28 \times 9 + 28$. $36 \times 4 + 36 \times 6$. $35 \times 11 - 35$.

3. A grocer paid $14.75 for eggs at 25 cents a dozen. How many dozen did he buy?

4. Find 3% of $3500. 4% of $625. 6% of 3000 men.

5. At $160 an acre, what is the value of a piece of land 9 rods long and 8 rods wide?

6. What will 857 feet of wire cost at 3 cents a yard?

7. A merchant sold 87½ yards of carpet at 72 cents a yard. How much did he receive for it?

8. Find .4% of $1600. .6% of $900. .8% of $2500.

9. Find the capacity of tanks: 22 in. by 15 in. by 14 in. 24″ by 22″ by 21″. 15″ × 14″ × 11″.

10. How many posts will be required for a fence 12 rods long, if the posts are set 6 feet apart?

AREA AND ONE DIMENSION

Since the area, or the number of square units, is the product of the two dimensions, if the area and one dimension are given, the other dimension is found by dividing the area by the given dimension.

NOTE. — The area and given dimension must be expressed in corresponding units. If the area is in square yards and the given dimension in feet, the area must be reduced to square feet; if the area is in acres and the given dimension in rods, the area must be reduced to square rods; if the area is in acres and the given dimension is chains, the area must be reduced to square chains.

LESSON 54

1. $8\frac{5}{6} + 9\frac{3}{4} - 5\frac{7}{9}$. **2.** $186\frac{5}{7} \times 40$. **3.** $6\frac{3}{4} + 7\frac{1}{3} \div 2\frac{3}{4}$.

4. $9\frac{1}{5} - 4\frac{2}{3} + 8\frac{5}{6}$. **5.** $245\frac{5}{8} \times 60$. **6.** $9\frac{1}{3} - 2\frac{2}{5} \times 1\frac{3}{7}$.

7. Find 115% of $480. .8% of $4750. $30\frac{2}{3}$% of $567.

8. A rectangular field 50 rods long contains $12\frac{1}{2}$ acres. How wide is it?

9. A ceiling 23 feet long contains $30\frac{2}{3}$ square yards. Find the width of it.

10. If the divisor is 675, the quotient 488, and the remainder 548, what is the dividend?

11. A man sold 685 bu. of oats and had 4 ninths of his crop left. How many bushels had he left?

12. A man took to market 3 tons 1800 pounds of wheat, which he sold at 86 cents a bushel. Find the value.

LESSON 55

1. $14\frac{7}{8} + 6\frac{1}{4} - 7\frac{3}{4}$. **2.** $25\frac{1}{7} \div 9\frac{7}{9}$. **3.** $4\frac{2}{5} \times 8\frac{3}{4} \times 4\frac{2}{7}$.

4. $20\frac{8}{9} - 8\frac{1}{3} + 4\frac{5}{6}$. **5.** $14\frac{2}{5} \div 5\frac{1}{7}$. **6.** $7\frac{1}{2} + 5\frac{5}{6} + 9\frac{7}{8}$.

7. Add $48\frac{7}{8}$, $7.9\frac{1}{3}$, $265.7\frac{1}{4}$, $48\frac{2}{3}$, 8.65, $72\frac{5}{8}$, and 168.5.

8. A rectangular field 18.4 chains wide contains 48.3 acres. Find the length of the field.

9. At 95 cents a rod, what will it cost to build a fence on both sides of a road $1\frac{1}{4}$ miles long?

10. At $2.75 a cord, what is the value of 3 piles of cordwood, each 65 feet long and 8 feet high?

11. At 75 cents a hundred, what is the value of 18 bales of hay, the average weight being 175 pounds?

12. A man bought 468 acres of land at $65 an acre. He sold part of it at the same price and received $17,810 for it. How many acres did he have left?

In computing the area of the walls of a room, the pupil should multiply the perimeter of the room by the height.

1. How many square yards are there in the walls of any room 9 feet high?

2. Find 1% of $306. ½% of $2650. ⅓% of 4500.

3. A lady bought 12½ yards of lace at 72 cents a yard. What did she pay for it?

4. What will four dozen hats cost at 75 cents apiece?

5. At $80 an acre, what is the value of a piece of land 8 rods long and 6 rods wide?

6. A foot is 33⅓% of   40 square rods is 25% of

7. After a man had spent 62½% of his salary, he had $450 left. How much did he spend?

8. 480 ÷ 15. 512 ÷ 16. 544 ÷ 17. 576 ÷ 18.

9. How many square yards are there in the walls of a room 14 feet square and 9 feet high?

10. Find 2% of $1520. 3% of $2500. 5% of 560 sheep.

11. Find the capacity of tanks: 33 in. by 14 in. by 12 in. 28″ by 22″ by 18″. 21″ × 15″ × 11″.

12. At $10 a ton, what will 3760 pounds of hay cost?

13. At the rate of 3 quarts for 25 cents, for how many quarts of berries will a man receive $3.75?

14. 8 rods are — yards. 8 rods are — feet.

15. At $320 an acre, what would a man receive for a piece of land ten rods long and six rods wide?

16. Find 20% of a ton. 12½% of 2 hours. 37½% of 64 bushels. 62⅔% of $270. 16⅔% of a gross.

17. A man paid $15 for berries at 6 cents a quart and sold them at 10 cents a quart. Find his profit.

LESSON 56

1. $9\frac{4}{5} + 7\frac{2}{3} - 8\frac{5}{6}$. **2.** $149\frac{1}{3} \div 3$. **3.** $8\frac{1}{3} - 4\frac{3}{4} - 2\frac{5}{6}$.

4. $5\frac{3}{8} \times 7\frac{3}{4} + 7\frac{4}{5}$. **5.** $257\frac{2}{3} \div 4$. **6.** $7\frac{1}{2} \times 3\frac{3}{4} + 9\frac{3}{5}$.

7. Reduce 2 cu. yd. 3 cu. ft. 75 cu. in. to cubic inches.

8. At $1.25 a bushel, what will 4 bushels 3 pecks 6 quarts of onions cost?

9. A man bought a horse for $120, which was 8% of his money. How much did he have left?

10. Find the number of square yards in the walls and ceiling of a room 18 ft. by 15 ft. by 10 ft.

11. At $15 a ton, for how many pounds of hay will a man receive ninety-one dollars eighty cents?

12. A rectangular piece of land 25 chains long contains $45\frac{5}{8}$ acres. Find the width of the field in rods.

LESSON 57

1. Reduce 2 sq. rd. 3 sq. yd. 7 sq. ft. to square inches.

2. $948 + (297 \div 3) \times 8 - (28 \times 45) \div 9 + \overline{86 + 75} \times 9$.

3. At 85 cents a cubic yard, what will it cost to excavate a cellar $45' \times 30' \times 6'$?

4. The walls of a room 18 ft. long and 13 ft. wide contain 62 sq. yd. How high is the room?

5. How many dozen eggs, at 22 cents a dozen, will pay for 451 lb. of sugar at 6 cents a pound?

6. At $18\frac{3}{4}$ cents a foot, what will it cost to fence a rectangular field 34 rods long and 18 rods wide?

7. A merchant's profits in $7\frac{1}{2}$ months were $1675. At the same rate, what would his profits be in a year?

8. How many yards of wire will it take to make a wire fence of 4 wires around a square field 18 rods long?

1. A man discharged 20% of a debt by paying $75. How much did he still owe?

2. Find 1% of $3468. $\frac{1}{3}$% of $960. $\frac{1}{4}$% of 6400.

3. At 25 cents a yard, how much will a merchant receive for 960 yards of ribbon?

4. $\overline{28 \times 15} \div 21$. $(35 \times 30) \div 25$. $180 \div \overline{6 \times 5}$.

5. A rectangular field 8 chains wide contains 16 acres. Find the length of it in chains.

6. At $10 a ton, what will 8490 pounds of hay cost?

7. A man sold a half-section of land at $2.75 an acre. How much did he receive for it?

8. $38 \times 9 + 38$. $54 \times 7 + 54 \times 3$. $46 \times 11 - 46$.

9. Find the capacity of tanks: 33 in. by 15 in. by 14 in. 30″ by 22″ by 21″. 18″ × 14″ × 11″.

10. $.76 × 25. $.64 × 75. $.37$\frac{1}{2}$ × 48. $.62$\frac{1}{2}$ × 32.

11. A man bought property for $6000 and sold it at a profit of 25%. What did he receive for it?

12. $1.25 × 96. $3.75 × 64. $6.25 × 48.

13. At $375 an acre, what is the value of a rectangular piece of land 96 rods long and 40 rods wide?

14. $352 \div 16$. $510 \div 15$. $651 \div 21$. $1275 \div 25$.

15. If a man can do 1 third of a piece of work in 6 days, in how many days can he do the whole of it?

16. $800 is 5% of $84 is 6% of $120 is 8% of

17. How many square inches will be cut off in a strip 2 inches wide all around a square foot of paper?

18. Find 12$\frac{1}{2}$% of $2400. 16$\frac{2}{3}$% of $.90. 25% of $2800.

19. At 50 cents a rod, what will it cost to build a fence on both sides of a road 3 fourths of a mile long?

LESSON 58

1. $8\frac{3}{4} - 2\frac{2}{3} \times 2\frac{1}{2}$. **2.** $287\frac{3}{4} \div 3$. **3.** $7\frac{2}{3} + 8\frac{3}{4} + 6\frac{5}{6}$.

4. $6\frac{2}{3} \div \overline{7\frac{1}{2} - 4\frac{2}{3}}$. **5.** $393\frac{2}{3} \div 4$. **6.** $9\frac{1}{3} - \overline{7\frac{5}{6} - 4\frac{4}{5}}$.

7. Reduce 8 cu. yd. 9 cu. ft. 86 cu. in. to cubic inches.

8. Add $87\frac{2}{3}$, .438, $9\frac{4}{5}$, $.7\frac{7}{8}$, $47\frac{5}{8}$, $9\frac{1}{3}$, and $58\frac{1}{8}$, and express the sum in words.

9. How many days will 160 bushels of oats last 8 horses, if each horse eats 10 quarts a day?

10. Find the value, at $17 a ton, of two loads of hay, weighing 2265 and 2470 pounds respectively.

11. A garden contains 7 eighths of an acre. If it is one hundred sixty-five feet wide, how long is it?

12. A farmer drew to market 12 tons of oats, which he sold at 38 cents a bushel. What did he get for them?

LESSON 59

1. Find $12\frac{1}{2}\%$ of $7000. $.8\%$ of $5650. $20\frac{2}{3}\%$ of $975.

2. Reduce 5 sq. rd. 6 sq. ft. 65 sq. in. to square inches.

3. A man sold hay at $13.50 a ton, receiving $116.10 for it. How much did he sell?

4. A dealer sold cheese at 8 and $\frac{3}{4}$ cents a pound for $1295. How many pounds did he sell?

5. How many rods of fence will enclose a quarter-section of land and divide it into 4 squares?

6. If a grocer receives $3.60 for .75 of a barrel of flour, what would he receive for 8.5 barrels?

7. A man sold $\frac{1}{12}$ of his potatoes for $68.75. At the same price, what was 3 fourths of his crop worth?

8. A man paid $84 on a debt, which was equal to 35% of what he still owed. How much was the debt at first?

1. At $160 an acre, what is the value of a piece of land 12 rods long and 6 rods wide?

2. At 12½ cents a foot, what will it cost to build a fence around a garden 200 feet by 100 feet?

3. How much butter, at 32 cents a pound, will pay for 160 pounds of sugar at 6 cents a pound?

AREA OF TRIANGLES

A **Triangle** is a plane figure bounded by three straight lines.

The **Base** of a triangle is the side on which it is supposed to stand.

The **Vertical Angle** of a triangle is the angle opposite the base.

The **Vertex** of an angle is the point where the sides of the angle meet.

The **Altitude** of a triangle is the perpendicular distance from the vertex of the vertical angle to the base, or to the base prolonged.

The **Dimensions** of a triangle are its base and altitude.

The diagonal of any rectangle divides it into two equal triangles, hence each triangle is half of the rectangle. Since the area of the rectangle is the product of the two dimensions, *which are the same as the base and altitude of each triangle*, and since each triangle is half of the rectangle, we find the area of the triangle *by multiplying one dimension by half the other*.

Find the area of a triangle whose base is 40 feet and whose altitude is 16 feet.

$40 \times 8 = 320$. $20 \times 16 = 320$. Area 320 sq. ft.

LESSON 60

1. $8\frac{1}{3} - 9\frac{1}{3} \div 2\frac{5}{8}$. **2.** $193\frac{5}{6} \div 4$. **3.** $9\frac{2}{3} - 4\frac{5}{6} + 7\frac{3}{4}$.

4. What will 12,750 lb. of straw cost at $7.80 a ton?

5. Add 86.7, $9\frac{3}{8}$, $.6\frac{2}{3}$, $475.6\frac{3}{4}$, $9.65\frac{1}{3}$, $49\frac{7}{8}$, and $50.48\frac{1}{8}$.

6. Find the area of a triangle whose base is 65 feet and whose altitude is 45 feet.

7. The area of a triangle is 234 square feet, and the base is 26 feet. Find the altitude.

8. Find the area of a triangle whose base is four rods six feet and whose altitude is three rods.

9. Find the area in acres of a triangular field whose base is 32 rods and whose altitude is 14 rods.

10. The area of a triangle is forty-four square yards, and the altitude is twenty-two feet. Find the base.

LESSON 61

1. $9\frac{3}{7} - \overline{5\frac{1}{4} + 3\frac{5}{7}}$. **2.** $175\frac{3}{5} \div 6$. **3.** $9\frac{1}{6} - \overline{3\frac{3}{4} - 2\frac{2}{3}}$.

4. What will 12,750 lb. of straw cost at $8.20 a ton?

5. What are the prime factors of 539, 1155, and 1593?

6. Find $30\frac{2}{3}\%$ of $86.40. 8% of $187.50.

7. At $1.50 a rod, it cost $222 to enclose a field 42 rods long. How wide is it?

8. Find the altitude of a triangle whose area is 4 square feet and whose base is 3 feet.

9. If the divisor and quotient are each 476 and the remainder 386, what is the dividend?

10. A triangular piece of land contains $2\frac{1}{4}$ acres. If the altitude is 24 rods, what is the base?

11. A man bought land for $15,360 and sold it for $20,160, gaining $3.75 per acre. Find the cost per acre.

1. At 18 cents a pound, how much will 3 and 1 half pounds of beef cost?

2. Find 2% of $650. 4% of $3500. 5% of 1800 acres.

3. At 60 cents a yard, what will 5 and 3 fourths yards of ribbon cost?

4. At $6 a yard, what will 60 inches of lace cost?

5. How many square inches are there in a sheet of paper 3 feet 4 inches square?

6. $\overline{36 \times 20} \div 16$. $(28 \times 18) \div 21$. $\overline{48 \times 8} \div 64$.

7. A rectangular piece of land 12 chains long contains 10.8 acres. How wide is it?

8. At $8 a ton, what will 1650 pounds of hay cost?

9. If a man receives $1.50 for .6 of a day's work, how much will he receive for 8 days' work?

10. Find 1% of $472. $\frac{1}{2}\%$ of $3640. $\frac{1}{8}\%$ of $6400.

11. At 65 cents a bushel, what is the value of 3 loads of potatoes, if the average weight is 1 ton?

12. $\$.25 \times 75$. $\$.75 \times 64$. $\$.12\frac{1}{2} \times 96$. $\$.37\frac{1}{2} \times 48$.

13. If a merchant buys gloves at $9 a dozen, at what price per pair must he sell them to gain 20%?

14. $9 is 4% of $9.75 is 10% of $84 is 6% of

15. At $100 an acre, what is the value of a rectangular piece of land 12 chains long and 11 chains wide?

16. $15 - 8.4$. $22 - 7.7$. $31 - 8.1$. $42 - 9.6$.

17. A man picked 96 barrels of apples, which he sold at $1.25 a barrel. How much did he receive for them?

18. $\$3.15 \div \$.03$. $\$4.60 \div \$.04$. $\$8.96 \div \$.08$.

19. How many square yards are there in the walls of a room 16 feet long, 14 feet wide, and 9 feet high?

LESSON 62

1. $9\frac{3}{4} + 7\frac{2}{3} - 4\frac{5}{6}$. **2.** $175 \times 20\frac{3}{4}$. **3.** $6\frac{3}{4} \times 4\frac{1}{2} - 8\frac{3}{4}$.

4. Find the value of 865 ft. of lumber at $28.50 per M.

5. Find least common multiple of 184, 522, and 780.

6. Find the two smallest numbers that 59 and 69 will exactly divide.

7. How many cubic feet of air are there in a room 14 feet square and 9 feet high?

8. What is the value of 5 loads of potatoes averaging 2160 pounds at 65 cents a bushel?

9. A rectangular field 12.5 chains wide contains $16\frac{3}{8}$ acres. Find the length of the field in chains.

10. What is the average price of 10 horses, if four of them cost $160 apiece and the others $180 apiece?

LESSON 63

1. $\overline{8\frac{1}{3} - 4\frac{3}{4}} \times 2\frac{1}{2}$. **2.** $344 \times 30\frac{4}{5}$. **3.** $\overline{9\frac{1}{2} - 4\frac{2}{3}} \div 5\frac{4}{5}$.

4. $376 is $15\frac{2}{3}\%$ of what? $1081 is 115% of what?

5. A man sold 119 sheep and had 66% of his flock left. How many did he have left?

6. At $2.85 a cord, what is the value of a pile of cordwood 122 feet long and 8 feet high?

7. Find the number of square yards in the walls and ceiling of a room 19′ 6″ by 15′ 6″ by 11′.

8. The area of a triangular surface is 24 square yards, and the altitude is 18 feet. Find the base.

9. A merchant received $29.75 for 5 sixths of a piece of silk at $.85 a yard. How many yards were left?

10. A farmer sold $\frac{8}{11}$ of his potatoes and had 264 bushels left. Find the value of those sold at $.65 a bushel.

1. At $80 an acre, what is the value of a piece of land 8 rods square?

2. Find 1% of $4530. ½% of $870. ¼% of $1400.

3. At 96 cents a yard, what will a merchant receive for 37½ yards of silk?

4. At $10 a ton, what will 3960 pounds of hay cost?

5. How many square yards are there in a lawn 180 feet long and 75 feet wide?

6. ⅓ of a foot is ⅑ of   ⅙ of a yard is 12½% of

7. A man sold 1 fifth of his sheep at $3 a head for $90. How many did he have left?

8. $150 is 16⅔% of $150 is 20% of $150 is 33⅓% of

9. If a horse eats 12 quarts of oats a day, how many days will 60 bushels last him?

10. 230 sq. ch. are — acres.   185 sq. ch. are — acres.

11. How many inch cubes are there in a block of marble 1 yard long and 5 inches square at the ends?

12. 12 rods are — yards.   12 rods are — feet.

13. How many square feet are there in a triangle whose base is 25 feet and altitude 16 feet?

14. What can you make by uniting 9 4-inch squares?

15. A man received $32 for berries at 10 cents a quart. How many crates of 32 quarts did he sell?

16. 56 × 250.   56 × 375.   68 × 125.   48 × 875.

17. At the rate of 3 pounds for 25 cents, how much will a grocer receive for 45 pounds of rice?

18. Find 12½% of $480. 16⅔% of 2400. 25% of $600.

19. A man bought a house for $2500, which was 20% of his money. How much money did he have left?

LESSON 64

1. $5\frac{2}{3} + 7\frac{3}{4} - 4\frac{5}{6}$. **2.** $85 \times 20\frac{3}{4}$. **3.** $9\frac{1}{6} - 3\frac{2}{3} - 4\frac{3}{4}$.

4. Reduce .95 of a cubic yard to lower denominations.

5. $203 is 7% of what? 3021 is 106% of what?

6. Add $7\frac{1}{3}$, 85.74, $.8\frac{3}{5}$, $5\frac{7}{8}$, 56.08, $8\frac{2}{3}$, and $9\frac{3}{8}$, and express the sum in words.

7. A square field has a perimeter of 96 rods. Find the value of it at $75 an acre.

8. A man bought a farm of 96 acres 6 square chains at $45 an acre. Find the cost of it.

9. From six ten-thousandths subtract nine millionths and multiply the result by eight thousand.

10. A lady spent $\frac{1}{4}$ of her money for a cloak, $\frac{1}{5}$ for a dress, and had $60.50 left. How much did she spend?

LESSON 65

1. $6\frac{2}{3} \div 2\frac{1}{2} + 7\frac{3}{4}$. **2.** $94 \times 30\frac{4}{5}$. **3.** $9\frac{5}{6} - 3\frac{1}{3} \times 2\frac{1}{2}$.

4. Find $.20\frac{5}{6}$ of $924. .8% of $1275. 135% of $365.

5. A clerk spent $456 and had 62% of his salary left. How much did he save?

6. There are 760 pupils in a school, and 55% of them are girls. How many boys are there?

7. At $45 an acre, what is the value of a rectangular piece of land 16 ch. long and 12 ch. wide?

8. A merchant paid $112.50 for 3 pieces of silk at $1.50 a yard. How many yards were in each piece?

9. How many square yards are there in a triangle whose base is 72 feet and whose altitude is 54 feet?

10. A merchant paid $119 for lace at 85 cents a yard and sold it at $1.15 a yard. How much did he gain?

1. At 25 cents a dozen, how much will a grocer receive for 65 dozen eggs?

2. Find 3% of \$750. 4% of 4500. 6% of 4000 bu.

3. If a rectangle 20 in. wide contains 240 2-inch squares, how long is it?

4. $\overline{35 \times 9} \div 21$. $(42 \times 35) \div 49$. $\overline{64 \times 7} \div 56$.

5. The perimeter of a square piece of ground is 36 chains. How many acres are there?

6. $46 \times 9 + 46$. $48 \times 5 + 48 \times 5$. $58 \times 11 - 58$.

7. At 30 cents a pound, how many pounds of coffee can be bought for eighteen dollars?

8. \$.25 × 35. \$.25 × 54. \$.25 × 65. \$.25 × 82.

9. If a merchant buys flour at \$4.80 a barrel, at what price must he sell it to gain $12\frac{1}{2}\%$?

10. \$3.20 × $37\frac{1}{2}$. \$4.80 × 75. \$6.40 × $62\frac{1}{2}$.

11. How many square inches are there in a triangle whose base is 28 in. and altitude 20 in.?

12. \$45 is 3% of \$60.48 is 4% of \$48 is .8% of

13. Find the capacity of tanks: 33 in. by 21 in. by 14 in. 27″ by 22″ by 21″. 24″ × 14″ × 11″.

14. $8.6 + 7.8$. $9.4 + 6.7$. $9.1 - 4.5$. $8.3 - 5.6$.

15. What per cent of 36 is 18? Of 44 is 11? Of 21 is 7? Of 72 is 9? Of 60 is 12? Of 48 is 36?

16. $\frac{1}{4}$ of a yard is 50% of $\frac{1}{3}$ of 27 in. is 25% of

17. If a farmer sells sheep at \$6.75 a head and lambs at \$3.25 a head, what will he receive for 36 of each?

18. Find 10% of \$634. 20% of 650 men. $33\frac{1}{3}\%$ of \$750.

19. How many square inches will be cut off in a strip 2 inches wide all around a piece of paper 22 inches square?

LESSON 66

1. $8\frac{5}{6} + 7\frac{2}{3} - 5\frac{3}{4}$. **2.** $145\frac{2}{3} \div 3$. **3.** $9\frac{2}{3} - 4\frac{5}{6} - 3\frac{3}{4}$.

4. $879 + 7 \times (475 \div 5) - (432 - 275) \times 4 + 43 \times 17$.

5. What is the value of 26,785 brick at $6.75 per M?

6. The area of a triangle is $2\frac{3}{5}$ acres, and the base is 32 rods. Find the altitude.

7. A farmer sold .68 of his wheat and had 272 bushels left. How many bushels did he sell?

8. What will it cost, at $24\frac{3}{4}$ cents a yard, to enclose a rectangular garden 18 rods by 14 rods?

9. A lady bought .375 of a yard of silk for $1.20. How many yards could she have bought for $51.20?

10. A man sold 1 fifteenth of his berries for $16.35. At the same price, what was the value of $\frac{3}{5}$ of his crop?

LESSON 67

1. $\overline{4\frac{1}{2} - 1\frac{3}{4}} \div 5\frac{1}{2}$. **2.** $198\frac{2}{7} \div 4$. **3.** $\overline{8\frac{1}{3} - 3\frac{3}{4}} \times 7\frac{1}{2}$.

4. Find the value of 48,675 lb. of coal at $5.60 a ton.

5. Add $9\frac{5}{8}$, .845, $7\frac{2}{3}$, $56\frac{4}{5}$, $.65\frac{1}{3}$, 59.34, and $37\frac{3}{8}$, and express the sum in words.

6. If $.7\frac{1}{2}$ of a ton of hay is worth twelve dollars sixty cents, what will $8\frac{1}{4}$ tons cost?

7. At $3.65 a cord, what is the value of a pile of cordwood 186 feet long and 8 feet high?

8. Find the number of square yards in the walls and ceiling of a room 21 ft. by 15 ft. by 10 ft.

9. A has 385 acres of land, which is 44% of the number of acres owned by B. How many acres have both?

10. A man sold apples at a profit of 65 cents a barrel and gained $910. Find the cost at 95 cents a barrel.

1. If 9 yards of silk cost $11.25, what will 27 yards of the same kind cost?

2. Find 1% of $683. $\frac{1}{2}\%$ of $2500. $\frac{1}{3}\%$ of $540.

3. At $3.20 a bushel, how much must be paid for 1 peck 6 quarts of clover-seed?

4. What per cent of 75 is 25? Of a mile is 80 rods?

5. At 30 cents a yard, what is the value of nine hundred seventy-five feet of rope?

6. $576 \div 18$. $264 \div 22$. $588 \div 28$. $1575 \div 25$.

7. At $320 an acre, what is the value of a piece of land 9 rods long and 6 rods wide?

8. $6.45 ÷ $.03. $8.60 ÷ $.04. $9.50 ÷ $.05.

9. How many square feet are there in a triangle whose base is 50 ft. and altitude 24 ft.?

10. At $10 a ton, what will 9650 pounds of hay cost?

11. A rectangular piece of land 7 chains wide contains 10.5 acres. Find the length of the field.

12. $\overline{24 \times 21} \div 9$. $(25 + 18) + 15$. $180 \div \overline{6 \times 6}$.

13. If a grocer buys tea at 45 cents a pound, at what price per pound must he sell it to gain $33\frac{1}{3}\%$?

14. 86 sq. ch. are — acres. 14 acres are — sq. ch.

15. A man sold $\frac{1}{12}$ of a piece of land for $75. At the same price, what is 2 thirds of the piece worth?

16. $15 is 20% of $75 is $33\frac{1}{3}\%$ of $15 is $12\frac{1}{2}\%$ of

17. A grocer received $36.25 for tea, which he sold at 50 cents a pound. How many pounds did he sell?

18. Find 2% of $1630. 4% of 1575. 5% of 650 yards.

19. How many quarts of berries, at 12 cents a quart, will pay for 96 pounds of sugar at 6 cents a pound?

LESSON 68

1. $32\frac{3}{8} - 6\frac{3}{4} \times 2\frac{8}{9}$. **2.** $138 \times 20\frac{3}{8}$. **3.** $7\frac{1}{2} - 8\frac{2}{7} \div 2\frac{2}{7}$.

4. Find $30\frac{1}{3}\%$ of $861. $130\frac{2}{3}\%$ of $1470. 4.6% of $750.

5. Reduce 196,795 sq. in. to higher denominations.

6. A man sold 18% of his farm and had 205 acres left. How many acres did he sell?

7. How many rods of fence will enclose a rectangular garden 495 feet long and 330 feet wide?

8. At what price per pound will 175 lb. of sugar pay for 35 lb. of butter at 30 cents a pound?

9. At $18 a month for boys and $56 a month for men, how much will 6 boys and 9 men earn in 4 months?

10. How many feet of lumber must be bought for a floor 10 yd. by 12 yd., allowing $\frac{1}{28}$ of the lumber for waste?

LESSON 69

1. $21\frac{5}{6} + 8\frac{3}{4} \div 2\frac{5}{8}$. **2.** $174 \times 40\frac{4}{5}$. **3.** $2\frac{2}{3} \times 2\frac{1}{2} - 4\frac{3}{4}$.

4. At $9.50 a ton, what will 6275 lb. of plaster cost?

5. At $28 per M, how many feet of lumber cost $217.70?

6. Reduce 23 sq. rd. 19 sq. yd. 6 sq. ft. to square feet.

7. The base of a triangle is 30 rods, and the area is $2\frac{1}{4}$ acres. Find the altitude.

8. If a man receives $2.25 for .6 of a day's work, how much will he receive for 16.4 days?

9. At $85 an acre, what is the value of a piece of land containing 28 acres 8 square chains?

10. A rectangular field 15.7 chains long contains $19\frac{5}{8}$ acres. Find the width of the field in chains.

11. At $1.35 a cubic yard, what will it cost to excavate a cellar 36 feet long, 24 feet wide, and 6 feet deep?

CARPETING

Carpeting is sold by linear measure. It is cut into strips, and these are sewed together. The number of yards required for a room is the combined length of all the strips. In matching the pattern, it is nearly always necessary to cut all the strips, *except the first*, longer than the dimension of the room. Besides this waste in matching the pattern, it is often necessary to buy part of a strip more than is needed. For example, if five strips and part of another are needed, six strips must be bought.

If the strips are to run *lengthwise*, we determine the number of strips to be bought by dividing the *width* of the room by the width of the carpet. The length of the first strip cut is the length of the room, and the length of each of the other strips is the length of the room plus the waste in matching.

How many yards of carpet 27 in. wide will be required for a room 15 ft. 6 in. long and 13 ft. wide, if the strips run lengthwise and there is a waste of 9 in. on each strip except the first in matching?

27 in. = 2.25 ft. $13 \div 2.25 = 5 +$ 6 strips.
1 strip . . . . . 15′ 6″
5 strips, each 16′ 3″ . . . 81′ 3″

The sum of the 6 strips is 96¾ ft., or 32¼ yd.

If the strips are to run *across* the room, we determine the number of strips to be bought by dividing the *length* of the room by the width of the carpet.

$15.5 \div 2.25 = 6 +$ 7 strips.
1 strip . . . . . 13′
6 strips, each 13′ 9″ . . . 82′ 6″

LESSON 70

1. What number besides 149 will exactly divide 11,771?

2. At $5.60 a ton, how much coal can you buy for $20.30?

3. How many 2-inch cubes are there in a block of marble 5 ft. by 28 in. by 18 in.?

4. A farmer sold 8 loads of hay averaging 2285 pounds at $15 a ton. Find the value of it.

5. A man sold 5 sixths of his berries at 8 cents a quart for $60. How many quarts did he raise?

6. How many yards of carpet 27 in. wide will be required for a room 16 ft. long and 14 ft. wide, if the strips run lengthwise and there is a waste of 1 foot on each strip except the first in matching? How many yards will be required, if the strips run across the room?

LESSON 71

1. Find the common prime factors of 2310 and 2541.

2. If a horse eats 12 qt. of oats a day, how many bushels will last 4 span of horses 4 weeks?

3. How many square yards are there in the walls and ceiling of a room 16 ft. square and 8 ft. high?

4. A man sold 544 bushels of potatoes, which was .64 of his whole crop. How many bushels did he have left?

5. If silver spoons cost $1.85 an ounce, find the value of a dozen spoons, each weighing 1 oz. 11 pwt. 16 gr.

6. How many yards of carpet 27 in. wide will be required for a room 18 ft. long and 13 ft. wide, if the strips run lengthwise and there is a waste of 9 in. on each strip except the first in matching? How many yards will be required, if the strips run across the room?

1. At $160 an acre, what is the value of a piece of land 12 rods square?

2. Find 1% of $5075. ⅓% of 7500. ¼% of $1800.

3. At 32 cents a pound, what would you pay for 2 pounds 12 ounces of butter?

4. $.75 × 48. $.75 × 52. $.75 × 64. $.75 × 88.

5. At 56 cents a gallon, what will a grocer receive for 62½ gallons of molasses?

6. Find 3% of $1200. 4% of 825 men. 6% of $750.

7. A rectangular piece of land 15 chains long contains 13.5 acres. How wide is the field?

8. 8 in. is 16⅔% of 32 square rods is 20% of

9. If a merchant buys silk at 90 cents a yard, at what price must he sell it to gain 33⅓%?

10. $45 is 5% of $60 is 4% of $75 is 6% of

11. How many half-inch squares are there in a piece of paper 1 yard long and 5 inches wide?

12. At $10 a ton, what will 8340 pounds of hay cost?

13. How many square inches are there in a triangle whose base is 4 ft. and altitude 40 in.?

14. $\overline{25 \times 21} \div 15$. $(56 \times 21) \div 49$. $375 \div \overline{25 \times 3}$.

15. Find the capacity of tanks: 44 in. by 15 in. by 14 in. 33″ by 22″ by 21″. 27″ × 14″ × 11″.

16. $12.20 ÷ $.04. $4.50 ÷ $.05. $12.80 ÷ $.08.

17. A man spent $750 in a year and had 4 ninths of his salary left. Find the amount of his salary.

18. Find 10% of $1535. 20% of 2000 bu. 33⅓% of $2445.

19. What per cent of 9 is 6? Of 6 is 9? Of a gallon is a quart? Of a yard is a foot? Of 72 is 9?

LESSON 72

1. Find 5.4% of \$680. 10⅔% of \$486. .8% of \$2750.

2. $796 + 84 \times 16 - (431 - 278) \times 4 + 643 - 539 \div 7$.

3. \$6.67 is 4.6% of what? \$51 is ¾% of what?

4. Add .74¾, 9⅔, 57⅝, .4¼, .87⅓, and 7.4, and express the sum in words.

5. A man sold .96 of his wheat and had 66 bushels left. How many bushels did he raise?

6. If .3¾ of a ton of coal is worth \$2.40, how many tons can be bought for eighty dollars?

7. A dealer paid \$3740 for flour at \$4.25 a barrel and sold it at \$4.65 a barrel. Find the gain.

8. A boy bought 4 bushels of peanuts at \$1.85 a bushel and sold them at 5 cents a pint. Find the profit.

LESSON 73

1. $848 \div .08\frac{5}{6}$. 2. $150.4 \div .15\frac{2}{3}$. 3. $8960 \div .35\frac{5}{9}$.

4. A boy bought a ball for \$.90, which was 12% of his money. How much did he have left?

5. A man sold 3 loads of hay at \$15 a ton for \$48.15. What was the average weight of the loads?

6. At \$145 an acre, find the value of a triangle of land whose base is 32 rd. and altitude 28 rd.

7. At 85 cents a bushel, what is the value of 9 acres of potatoes, if the average yield is 95 bu. an acre?

8. How many yards of carpet 27 in. wide will be required for a room 18 ft. 6 in. long and 16 ft. wide, if the strips run lengthwise and there is a waste of 9 in. on each strip except the first in matching? How many yards will be required, if the strips run across the room?

To determine how many tiles or brick will pave a given surface, pupils should find the number needed for one row and multiply that number by the number of rows.

1. How many tiles 6 inches square will pave a hall 20 feet by 6 feet?

2. Find 1% of $548. $\frac{1}{2}$% of $3300. $\frac{1}{8}$% of $5600.

3. If a horse eats 12 quarts of oats a day, how many bushels will last him 160 days?

4. At $12 a ton, what will 2700 pounds of hay cost?

5. How many square feet are there in a triangle whose base is 15 yd. and altitude 40 ft.?

6. $.25 × 17. $.25 × 26. $.25 × 35. $.25 × 41.

7. What is the average price of 3 coats, if two of them cost $17.50 apiece and the other $10?

8. Find 2% of $750. 3% of $850. 5% of 140 yards.

9. How many tiles 4 in. by 3 in. will be required to pave a hall 20 feet long and 5 feet wide?

10. $.25 × 18. $.25 × 23. $.25 × 29. $.25 × 46.

11. If a stationer buys paper at $3 a ream and sells it at 20 cents a quire, what is the profit?

12. A man paid $180 for sheep at $3 a head and sold them at $3.75 a head. How much did he gain?

13. A man sold 2 thirds of his farm at $50 an acre for $4000. How many acres were there in the farm?

14. A man sold 5 ninths of his potatoes at 40 cents a bushel for $160. How many bushels had he left?

15. A field is 40 rods square. How many rods of fence will enclose it and divide it into 4 squares?

16. At 60 cents a bushel, what is the value of two loads of potatoes, if the average weight is 2400 pounds?

LESSON 74

1. $38.13 is 8.2% of what? $2520 is 144% of what?

2. Find the greatest common divisor of 1029 and 1155.

3. Find the cost of 785 lb. of straw at $8.30 a ton.

4. At $2.85 a cord, what is the value of a cubical pile of wood 18 feet high?

5. At 48 cents a bushel, what is the value of 3 loads of oats averaging 1760 pounds?

6. The product of 3 numbers is 28,512, and two of them are 24 and 36. Find the other number.

7. A man had $9940. He invested 25% of it in land at $8.75 an acre. How many acres did he buy?

8. A man paid .28 of his money for a house, .45 of it for a farm, and had $8100 left. Find the cost of each.

LESSON 75

1. $375 is 20⅚% of what? $1044 is 7.25% of what?

2. Find 30% of $474. 8.4% of $1250. 108% of $1500.

3. How many tiles 6 in. square will pave a hall 48 ft. long and 8 feet wide?

4. The perimeter of a square field is 176 rods. Find the value of it at $65 an acre.

5. How many brick 8 in. by 4 in. will it take to pave a walk 180 yd. long and 6 ft. wide?

6. How many square yards are there in a triangle whose base is 63 feet and whose altitude is 48 feet?

7. How many boards 12 ft. by 9 in. will be required for a tight board fence 24 rd. long and 6 ft. high?

8. A man sold 1 fifteenth of his corn for $86.75. At the same price, what was 3 fifths of his crop worth?

1. At $80 an acre, what is the value of a piece of land 12 rods by 8 rods?

2. Find 1% of $6218. ½% of $470. ¼% of $2200.

3. How many tiles 4 inches square will be required to pave a floor 10 feet square?

4. $3.60 ÷ $.03. $6.80 ÷ $.04. $10.75 ÷ $.05.

5. A man sold 1 sixth of his sheep at $4 a head for $120. How many did he have left?

6. $\overline{35 \times 15} \div 21$. $(40 \times 35) \div 25$. $240 \div \overline{8 \times 5}$.

7. How many square yards are there in the walls of a room 18 ft. square and 9 ft. high?

8. 40 square rods are 25% of 10% of $75 is

9. At $3 a cord, what is the value of a pile of cordwood 200 feet long and 4 feet high?

10. At $8 a ton, what will 1950 pounds of straw cost?

11. A boy bought shoes for $2.50, which was 25% of his money. How much money did he have left?

12. $48 is 4% of $48 is 3% of $48 is 6% of

13. How many square yards are there in a triangle whose base is 27 feet and altitude 16 feet?

14. 8 rods are — yards. 8 rods are — feet.

15. At 35 cents a yard, how much will it cost to build a fence around a garden 150 feet square?

16. How many 3-inch cubes are there in a cubic foot?

17. If a cubic inch of some metal weighs 4 ounces, how much would a 4-inch cube of the same metal weigh?

18. Find 12½% of $560. 16⅔% of $3000. 25% of 640.

19. A man sold a piece of land for $8400 and gained a sum equal to 3 fourths of the cost. Find the profit.

LESSON 76

1. $188 \div .07\frac{5}{6}$. **2.** $1575 \div .8\frac{2}{5}$. **3.** $9920 \div .20\frac{2}{3}$.

4. $299.70 is 7.4% of what? $2744 is $18\frac{2}{3}$% of what?

5. Find .7% of $930. 8.2% of $715. 108% of $975.

6. A man sold 119 sheep and had 66% of his flock left. How many did he have left?

7. At the rate of 3 quarts for 25 cents, what is received for 6 bushels of berries?

8. How many posts are required for a fence 72 rods long, if the posts are set 6 feet apart?

9. A grocer bought 65 bu. of potatoes at 75 cents a bushel and sold them at 35 cents a peck. Find the gain.

10. At $24 per M, find the cost of lumber for a floor 30 ft. by 24 ft., allowing $\frac{1}{16}$ of the lumber for waste.

LESSON 77

1. Find 4.2% of $1250. $20\frac{2}{3}$% of $1689. 105% of $4800.

2. $368 is 12.8% of what? $12.90 is .15% of what?

3. Find the greatest common factor of 891 and 1072.

4. Add $.7\frac{1}{8}$, $6\frac{2}{3}$, .737, $46\frac{5}{8}$, $.9\frac{1}{3}$, 8.745, and $.8\frac{4}{5}$, and express the sum in words.

5. A man bought .44 of a ton of hay for $6.82. At the same price, what would 4.6 tons cost?

6. At $75 an acre, what is the value of a rectangular piece of land 18 chains long and 16 chains wide?

7. How many yards of carpet 27 in. wide will be required for a room 19 ft. long and 17 ft. wide, if the strips run lengthwise and there is a waste of 6 in. on each strip except the first in matching? How many yards will be required, if the strips run across the room?

1. How many acres are there in a triangle whose base is 40 rd. and altitude 24 rd.?

2. Find 3% of $1600. 4% of $2075. 6% of 6000 men.

3. How many 2-inch cubes are there in a plank 15 feet long, 12 inches wide, and 2 inches thick?

4. $35 \times 8 + 70$. $64 \times 8 + 64 \times 2$. $45 \times 12 - 90$.

5. How many square yards are there in the walls of a room $17\frac{1}{2}$ feet long, 14 feet wide, and 12 feet high?

BOARD MEASURE

Lumber is usually bought and sold by the thousand feet; that is, a thousand board feet.

A **Board Foot** of lumber is a piece 1 foot square and 1 inch thick, or its equivalent.

NOTE. — In measuring boards less than 1 inch thick, a board foot is a piece 1 foot square without regard to thickness.

RULE. — *Multiply the length in feet by the width in feet and that product by the thickness in inches.*

NOTE. — In computing board measure, take no account of the thickness when it is less than 1 inch.

How many board feet are there in 50 joists 30 feet long, 10 inches wide, and 3 inches thick?

$$30 \times \frac{5}{6} \times 3 \times 50 = 3750.$$

It will be found that when lumber is 8″ by 1½″, 6″ by 2″, or 4″ by 3″, the number of board feet in each piece is the same as the number of feet in the length; when lumber is 12″ by 2″, 8″ by 3″, or 6″ by 4″, the number of board feet in each piece is twice as many as the number of feet in the length; when lumber is 12″ by 3″, 9″ by 4″, or 6″ by 6″, the number of board feet in each piece is three times as many as the number of feet in the length; and so on.

LESSON 78

1. Reduce 4 sq. rd. 48 sq. ft. 96 sq. in. to square inches.

2. Find the number of board feet in 65 joists 24 ft. by 10 in. by 3 in.

3. How many board feet are there in 85 pieces of lumber 24 ft. by 5 in. by 4 in.?

4. At $16 per M, what is the value of 265 planks 18 ft. long, 8 in. wide, and 2 in. thick?

5. At $28 per M, what is the value of 75 pieces of lumber 30 feet long and 8 inches square?

6. How many board feet are there in 35 pieces of lumber 24 feet long and 15 inches square at the ends?

7. At 38 cents a bushel, what will a farmer receive for six loads of oats, if the average weight is 2080 pounds?

LESSON 79

1. Find 6.4% of $675. $30\frac{5}{6}$% of $786. 125% of $496.

2. $61.50 is 8.2% of what? $2144 is $44\frac{2}{3}$% of what?

3. Add 8.437, $5\frac{2}{3}$, $\frac{7}{8}$, $.4\frac{1}{4}$, $78\frac{3}{4}$, and $9.8\frac{1}{3}$, and express the sum in words.

4. Find the number of board feet in 48 pieces of lumber 18 ft. by 6 in. by 4 in.

5. At $22 per M, what is the value of 65 joists 28 ft. long, 8 in. wide, and 3 in. thick?

6. A man bought a house for $4900, which was 35% of his money. How much money did he have left?

7. A man sold 8790 pounds of hay at $12.50 a ton and twice as much at $14.50 a ton. Find the value of it.

8. How many square yards are there in the walls and ceiling of a room 24 ft. long, 18 ft. wide, and 10 ft. high?

1. At $320 an acre, what is the value of a piece of land 15 rods by 8 rods?

2. Find 1% of $826. ½% of $4500. ⅓% of $4800.

3. The perimeter of a square field is 128 rods. How many acres are there in it?

4. $\overline{35 \times 24} \div 15$. $(.96 \times 13) \div 26$. $\overline{56 \times 28} \div 49$.

5. At 72 cents a bushel, how much will a farmer receive for 87½ bushels of potatoes?

6. $.75 × 36. $.75 × 48. $.75 × 56. $.75 × 64.

7. If a rectangular field 25 rods wide has a perimeter of 140 rods, how long is it?

8. 125 × 36. 625 × 56. 875 × 64. 375 × 48.

9. If your mother buys 3 pints of milk a day, how many gallons will she buy in 96 days?

10. Find 2% of $1725. 5% of $720. 6% of 850 feet.

11. A rectangular piece of land 12 chains wide contains 18 acres. Find the length in rods.

12. $45 is 3% of $240 is 4% of $70 is 3½% of

13. How many posts will be required for a fence 36 rods long, if the posts are set 6 feet apart?

14. $4.80 × 12½. $5.60 × 37½. $6.40 × 62½.

15. Find the capacity of tanks: 44 in. by 18 in. by 14 in. 33″ by 33″ by 21″. 30″ × 14″ by 11″.

16. $2.50 × 38. $1.25 × 54. $3.75 × 64.

17. How many dozen eggs, at 18 cents a dozen, must be given for 90 pounds of sugar at 6 cents a pound?

18. Find 10% of $678. 20% of $2000. 33⅓% of $645.

19. A man bought wool at 22 cents a pound and sold it at 28¢, gaining $480. How many pounds did he buy?

LESSON 80

1. Find 7.6% of \$345. $20\frac{2}{3}$% of \$675. 108% of \$975.

2. Reduce 298,509 square feet to higher denominations.

3. $964 + 85 \times 6 - 1728 \div 12 - (95 - \overline{45 \times 5} \div 3) \times 6$.

4. The area of a triangle is 2.8 acres, and the base is 32 rods. Find the altitude.

5. At \$45 per M, what is the value of 16 pieces of lumber 24 ft. long and 18 in. square?

6. At \$3.75 a cord, what is the value of a pile of cordwood 100 feet long and 8 feet high?

7. A man bought .35 of an acre of land for \$56. At the same price, how many acres would cost \$1344?

8. At half a cent a yard for wire, what will it cost to put 4 wires around a square field 28 rods on each side?

LESSON 81

1. \$196 is 11.2% of what? \$1377 is 108% of what?

2. How many tiles 9 inches square will pave a hall 9 yd. long and 15 ft. wide?

3. If a man receives \$2.80 for .8 of a day's work, how many days must he work to earn \$84?

4. A man sold $\frac{1}{12}$ of his wheat for \$85.45. At the same price, what was the value of $\frac{2}{3}$ of his crop?

5. A man sold 8 loads of hay at \$15 a ton, receiving \$132 for it. Find the average weight of the loads.

6. How many yards of carpet 27 in. wide will be required for a room 16 ft. 9 in. long and 15 ft. wide, if the strips run lengthwise and there is a waste of 10 in. on each strip except the first in matching? How many yards will be required, if the strips run across the room?

1. Find the number of board feet in 10 planks, each 14′ by 8″ by 1½″.

2. Find 1% of $1545. ⅓% of $675. ¼% of $2600.

3. How many board feet are there in 50 12-inch boards fourteen feet long?

4. 25 yards are — feet. 10 rods are — feet.

5. If a man earns $3.75 a day how many days must he work to earn sixty dollars?

6. 7.5 + 8.6. 8.6 + 5.7. 9.2 + 6.4. 6.9 + 7.8.

7. How many acres are there in a rectangular field 32 rods long and 18 rods wide?

8. 12.2 − 4.7. 13.4 − 7.6. 15.3 − 9.8. 17.5 − 8.6.

9. A room is 16 feet square and 9 feet high. How many square yards are there in the walls?

10. $.25 × 37. $.25 × 46. $.25 × 59. $.25 × 75.

11. What per cent of 60 is 15? Of 15 is 60? Of a yard is a foot? Of ½ is ⅛? Of 4 dozen is 8?

12. $9.60 is 4% of $10.75 is 5% of $9.60 is 6% of

13. How many board feet are there in 20 joists 12 feet long, 12 inches wide, and 2 inches thick?

14. 496 ÷ 16. 756 ÷ 18. 462 ÷ 21. 1775 ÷ 25.

15. What per cent profit is there on tea bought at 30 cents a pound and sold at 45 cents a pound?

16. Find 12½% of $4000. 16⅔% of $420. 25% of $2060.

17. At 85 cents a yard, what is the value of 3 fifths of a piece of silk containing 33⅓ yards?

18. At $10 a ton, what will 7700 pounds of hay cost?

19. How many feet of lumber will be required for a close board fence 350 feet long and 4 feet high?

LESSON 82

1. Reduce 16 rods 4 yards 2 feet 7 inches to inches.

2. Reduce 4 ninths of a mile to lower denominations.

3. Reduce .387 of a square mile to lower denominations.

4. At $35 per M, what is the value of 45 pieces of lumber 28 ft. long and 6 in. square?

5. How many square yards are there in the walls and ceiling of a room 18 ft. by 12 ft. by 9 ft.?

6. The area of the walls of a room is 60 square yards. If the room is 15 ft. square, how high is it?

7. A man sold 84% of his crop of 750 bushels of potatoes at 65 cents a bushel. What did he receive for them?

8. A man paid $165.24 on a debt, and this was equal to .34 of what he still owed. Find the whole debt.

LESSON 83

1. Find 6.5% of $740. $\frac{3}{4}$% of $3700. 135% of $680.

2. $56.28 is 8.4% of what? $96 is $\frac{3}{4}$% of what?

3. Find the three smallest numbers of which 13, 19, and 23 are exact divisors.

4. The perimeter of a square field is 224 rods. What is the value of it at $95 an acre?

5. How many posts will be required for a fence 48 rods long, if the posts are set 6 feet apart?

6. A man sold .9 of his berries at eight cents a quart for $68.40. How many quarts had he left?

7. A speculator bought wool at 22$\frac{3}{4}$ cents a pound, for which he paid $6370. How many pounds did he buy?

8. How many 2-inch cubes are there in a block of marble 3 feet long, 26 inches wide, and 18 inches thick?

1. If a rectangle 20 inches wide contains 180 2-in. squares, how long is it?

2. Find 3% of $950. 4% of $3075. 5% of 2200 men.

3. How many board feet are there in 30 planks, each 16 feet by 6 inches by 2 inches?

4. Express decimally: $\frac{1}{5}$, $\frac{3}{4}$, $\frac{3}{5}$, $\frac{7}{8}$, $\frac{17}{20}$, $\frac{19}{25}$, $\frac{12}{125}$.

5. At $160 an acre, what is the value of a piece of land 15 rods long and 8 rods wide?

6. Express as common fractions: .18, .24, .35, .055, .064.

7. At $4.50 a cord, what is the value of a pile of cordwood 80 feet long and 4 feet high?

8. 95 sq. ch. are — acres. 80 yd. are — feet.

9. What per cent profit is there on flour bought at $4 a barrel and sold at $4.50 a barrel?

10. $76 \times 9 + 76$. $39 \times 6 + 39 \times 4$. $64 \times 11 - 64$.

11. At 6 cents apiece for oranges and 4 cents apiece for lemons, how much will 65 of each cost?

12. $7.50 is 3% of $75 is 4% of $7.50 is .5% of

13. A man bought a coat for $12.25, which was 25% of his money. How much money did he have left?

14. $6.48 ÷ $.03. $9.60 ÷ $.04. $7.50 ÷ $.05.

15. How many dozen eggs, worth 14 cents a dozen, are worth 21 pounds of beef at 16 cents a pound?

16. $\overline{35 \times 27} \div 15$. $(45 \times 20) \div 25$. $\overline{84 \times 11} \div 77$.

17. How many cubic feet of air are there in a room 12 feet long, 10 feet wide, and 9 feet high?

18. Find 10% of $1675. 20% of 750. 33⅓% of $2745.

19. How many board feet are there in 10 joists, each 18 feet long, 12 inches wide, and 3 inches thick?

LESSON 84

1. 152 ÷ .15$\frac{5}{6}$. 2. 368 ÷ .007$\frac{2}{3}$. 3. 259 ÷ .14$\frac{4}{5}$.

4. $819 is 8.4% of what? $1950 is 104% of what?

5. At $8.80 per M, how much will 24,675 brick cost?

6. How many tiles 9 in. square will pave a corridor 36 ft. long and 12 ft. wide?

7. If the divisor is 968, the quotient 467, and the remainder 724, what is the dividend?

8. At $2.85 a cord, what is the value of a pile of cord-wood 122 ft. long and 8 ft. high?

9. At ninety-five cents a rod, what will it cost to enclose a square field seventeen rods on each side?

10. A grocer bought tea for $275 and sold it at a profit of forty-five per cent. What did he receive for it?

LESSON 85

1. Find 7.6% of $470. 15.2% of $630. 108% of $925.

2. $1876 + (45 \times 16) \div 9 - 7 \times (128 - 12 \times 9) + 1365$.

3. Add 49.57, 7.6$\frac{3}{4}$, 74$\frac{3}{8}$, 9$\frac{2}{3}$, .65$\frac{4}{5}$, and 63$\frac{1}{3}$, and express the sum in words.

4. How many 4-inch squares are there in a piece of paper 8 yards long and 4 feet wide?

5. A triangle whose base is 36 rods contains 3$\frac{3}{8}$ acres. Find the altitude of the triangle.

6. A man sold 7 ninths of his wheat and had 178 bushels left. How many bushels did he sell?

7. A room is 13 feet by 11 feet, and the walls contain 384 square feet. Find the height of the room.

8. A farmer sold 8 loads of potatoes averaging 2160 pounds at 45 cents a bushel. What did he get for them?

VOLUME MEASUREMENTS

A Rectangular Solid is a solid bounded by six rectangular faces.

The **Dimensions** of a rectangular solid are its length, width, and thickness.

The **Volume** of any solid is the number of cubic units that it contains.

Volumes are therefore measured in cubes, larger or smaller, according as the volume measured is large or small. Many examples have already been given in this book and the two that precede it, in which pupils have been required to find the volume of rectangular solids by multiplying the number of cubes in a row by the number of rows in a layer, and that product by the number of layers. The number of cubes in a row is the same as the number of linear units in the length, the number of rows in a layer is the same as the number of linear units in the width, and the number of layers is the same as the number of linear units in the thickness. For this reason we generally say that we *multiply the length by the width and that product by the thickness.* It must be remembered, however, that the first multiplicand stands for the number of *cubic* units in a row, the first product the number of *cubic* units in one layer, and the last product the number of *cubic* units in the whole solid.

Pupils must also bear in mind that in finding the volume of a rectangular solid the dimensions must be expressed in the same unit.

How many cubic inches are there in a block of wood 1 yard long, 2 feet wide, and 8 inches thick?

$$36 \times 24 \times 8 = 6912$$

LESSON 86

1. Reduce 22 sq. rd. 24 sq. yd. 8 sq. ft. to square feet.

2. Divide 21 × 54 × 39 × 77 by 33 × 18 × 49 × 13.

3. At $24 per M, what is the value of 85 joists 30 ft. long, 10 in. wide, and 3 in. thick?

4. How many cubic feet of air are there in a room 35 feet long, 26 feet wide, and 14 feet high?

5. A block of granite contains 4752 cubic inches. If it is 18 in. wide and 11 in. thick, how long is it?

6. A merchant sold 244 yards of silk at $2.25 a yard and gained $183. Find the cost of the silk per yard.

7. A farmer sold 36 bbl. of apples at $2.50 a barrel, and enough potatoes at $.75 a bushel to make the whole sum $198. How many bushels of potatoes did he sell?

LESSON 87

1. Find the common prime factors of 2336 and 8019.

2. At $5.75 a ton, what is the value of a car-load of coal weighing 38,750 pounds?

3. A block of wood is 6 inches square. How long must it be to contain 2592 cubic inches?

4. A pile of cord-wood is 8 feet high. How long must it be to contain eight and a half cords?

5. How many cubic feet of water does a cistern hold that is 16 feet long, 13 feet wide, and 11 feet deep?

6. How many yards of carpet 27 in. wide will be required for a room 22 ft. 9 in. by 17 ft. 8 in., if the strips run lengthwise and there is a waste of 8 in. on each strip except the first in matching? How many yards will be required, if the strips run across the room?

1. At $80 an acre, what is the value of a piece of land 12 rods square?

2. Find 1% of $945. $\frac{1}{2}\%$ of $2080. $\frac{1}{8}\%$ of $4800.

3. How many suits requiring $3\frac{3}{4}$ yards each can be made from 45 yards of cloth?

4. $\overline{35 \times 18} \div 21$. $(75 \times 15) \div 45$. $\overline{56 \times 35} \div 49$.

5. Find the number of board feet in 40 joists 15 feet long and 8 by 3 inches.

6. At $1.25 apiece, what will fifty-six hats cost?

7. How many tiles 6 inches square will be required to pave a hall 14 feet long and 5 feet wide?

8. Find 2% of $850. 5% of $840. 6% of 6500 bu.

9. Find the number of board feet in 50 scantlings 18 feet long, 4 inches wide, and 3 inches thick.

10. At $12 a ton, what will 3400 pounds of hay cost?

11. If a merchant sells four yards of ribbon for one dollar, what will he receive for nineteen yards?

12. Find $12\frac{1}{2}\%$ of $640. $16\frac{2}{3}\%$ of $3600. 25% of $840.

13. How many board feet are there in 20 pieces of timber 20 feet long, 8 inches wide, and 6 inches thick?

VOLUME AND TWO DIMENSIONS

Since the volume, or the number of cubic units, is the product of the three dimensions, if the volume and two dimensions are given, the other dimension is found by dividing the volume by the product of the two dimensions.

NOTE. — The volume and given dimensions must be expressed in corresponding units. If the volume is in cords and the given dimensions in feet, the volume must be reduced to cubic feet.

LESSON 88

1. 7486 × 935. **2.** 957 × 648. **3.** 8596 × 748.

4. Reduce 3 sevenths of a mile to lower denominations.

5. $207 is 4.6% of what? $310 is 20⅔% of what?

6. How many 3-inch squares are there in a roll of paper 40 yards long and 4 feet wide?

7. How many square yards are there in the walls and ceiling of a room 18 ft. by 14 ft. by 10 ft.?

8. At $35 an acre, what is the value of a rectangle of land 18 chains long and 14 chains wide?

9. A block of marble contains 8640 cubic inches. If it is 4 ft. long and 18 in. wide, how thick is it?

10. A merchant sold 7 eighths of a piece of ribbon at 75 cents a yard for $21. How many yards were left?

LESSON 89

1. 9375 × 648. **2.** 859 × 746. **3.** 6839 × 745.

4. What are the prime factors of 1029 and 1980?

5. Find 9.4% of $550. 24.6% of $650. 107% of $376.

6. At $4.80 a ton, how many pounds of coal cost $45?

7. A shed is 14 ft. square. How high must wood be piled in it to make 12¼ cords?

8. A rectangular piece of land 22.9 chains long contains 28⅝ acres. Find the width in rods.

9. A room is 18 ft. by 15 ft., and the walls and ceiling contain 831 sq. ft. How high is the room?

10. A man sold 63 sheep, which was equal to 45% of the number he had left. How many had he at first?

11. At $.55 a bushel, what is the value of 8 acres of potatoes, if the average yield is 2 tons 1700 pounds?

1. Find the number of board feet in 10 pieces of lumber 24 ft. by 6 in. by 4 in.

2. Find 3% of $1800. 4% of $925. 5% of $3500.

3. How many acres are there in a triangle whose base is 32 rd. and altitude 30 rd.?

4. At $8 a ton, what will 2875 pounds of straw cost?

5. How many board feet are there in 5 pieces of lumber 20 feet long and 12 inches square?

6. Find the capacity of tanks: 44 in. by 21 in. by 14 in. 35″ by 33″ by 18″. 36″ × 21″ × 11″.

BRICK WORK AND STONE WORK

Stone work and brick work are generally estimated in cubic feet or cubic yards; and masons, in estimating the volume of an enclosing wall, regard it as one straight wall whose length is the outside perimeter. By so doing they reckon the corners twice.

In estimating the brick for a wall, masons allow 22 brick of ordinary size to the cubic foot.

In computing the cubic contents, actual measure, of an enclosing wall, pupils should find its equivalent in one straight wall. The equivalent length is found by adding four times the thickness of the wall to the inside perimeter, or subtracting four times the thickness from the outside perimeter.

1. A cellar wall is 38′ × 28′ × 8′ inside measure. If it is 18 in. thick, how many cubic feet of masonry, actual measure and masons' measure, does it contain?

2. A cellar wall is 40′ × 30′ × 7′ outside measure. If it is 2 ft. thick, how many cubic feet of masonry, actual measure and masons' measure, does it contain?

LESSON 90

1. 9374 × 856. **2.** 847 × 956. **3.** 4829 × 657.

4. $66.70 is 9.2% of what? $392 is $8\frac{1}{6}$% of what?

5. Find .$20\frac{2}{3}$ of $780. .8% of $1750. 115% of $285.

6. If a room is 14 feet square, how high must it be to contain 2058 cu. ft. of air?

7. At $35 per M, what is the value of 48 pieces of lumber 24 ft. long and 10 in. square?

8. A man sold 810 pounds of hops, which was .45 of his crop. How many pounds did he have left?

9. A man bought 6 bu. of nuts at $2.75 a bushel and sold them at 15 cents a quart. Find the gain.

10. A farmer sold .34 of his wheat and had 495 bu. left. Find the value of his whole crop at $.84 a bushel.

LESSON 91

1. 8294 × 756. **2.** 938 × 768. **3.** 9687 × 958.

4. At 75 cents per C, how much hay will cost $13.80?

5. A man reduced a debt 35% by paying $119 on it. How much did he still owe?

6. How many 3-inch cubes are there in a stick of timber 24 ft. long and 6 in. square?

7. The walls of a room 15 ft. long and 13 ft. wide contain 476 sq. ft. How high is the room?

8. At 65 cents a rod, what will it cost to build a fence on both sides of a road .8 of a mile long?

9. A merchant paid $80.75 for lace at 85 cents a yard and sold it at $1.40 a yard. How much did he gain?

10. Add 12 A. 90 sq. rd. 15 sq. yd. 8 sq. ft. 98 sq. in., 19 A. 29 sq. yd. 6 sq. ft. 78 sq. in., and 15 A. 85 sq. yd.

1. If a train runs 84 miles in 2 hours and 20 minutes, what is the rate per hour?

2. $7.20 ÷ $.03. $7 ÷ $.04. $5.40 ÷ $.06.

3. A rectangular field 16 chains long contains 12.8 acres. Find the width in chains.

4. Find 10% of $735. 20% of $2075. $33\frac{1}{3}\%$ of 945.

5. How many board feet are there in 40 pieces of lumber 20 ft. long and 9 by 4 in.?

6. $\overline{35 \times 27} \div 21$. $(45 \times 35) \div 25$. $\overline{120 \times 15} \div 60$.

7. At $320 an acre, what is the value of a piece of land 18 rods long and 10 rods wide?

8. $32 \times 8 + 64$. $86 \times 3 + 86 \times 7$. $35 \times 12 - 70$.

9. How many board feet are there in 8 pieces of lumber 25 feet long and 6 inches square?

10. How many square yards are there in a triangle whose base is 36 ft. and altitude 24 ft.?

11. At the rate of 2 for 5 cents, for how many dozen oranges will a man receive three dollars?

12. How many posts will be required for a fence 28 rods long, if the posts are set 7 feet apart?

13. Find the capacity of tanks: 33 in. by 28 in. by 21 in. 36″ by 33″ by 14″. 35″ × 21″ × 11″.

14. How many tiles 6 inches square will be required to pave a hall 15 feet long and 4 feet wide?

15. How many square yards are there in the walls of a room 22 feet long, 18 feet wide, and 9 feet high?

16. If a merchant buys hats at $15 a dozen, at what price each must he sell them to make a profit of 20%?

17. A grocer bought 80 bushels of potatoes at $.80 a bushel and sold them at 30 cents a peck. Find the gain.

LESSON 92

1. Find 3.8% of $450. 18.2% of $650. $\frac{4}{5}$% of $1750.

2. Find the smallest number that is exactly divisible by 338, 364, and 448.

3. Subtract 5 fur. 29 rd. 4 yd. 1 ft. 8 in. from 2 mi. 3 fur. 16 rd. 2 yd. 5 in.

4. How many square yards are there in the walls and ceiling of a room 24′ 6″ × 16′ × 10′.

5. There are 780 pupils in a school, and 55% of them are girls. How many boys are there?

6. A farmer received $33.30 for 3 loads of hay at $15 a ton. Find the average weight of the loads.

7. How many bushels of potatoes will it take to plant 7 A. 128 sq. rd., allowing 7 bu. 3 pk. to an acre?

LESSON 93

1. Find the value of $287.65 in English money.

2. Reduce 4 sevenths of an acre to lower denominations.

3. A man bought a farm for $3850, which was 44% of his money. How much had he left?

4. Add 17 mi. 2 yd. 2 ft. 11 in., 45 mi. 306 rd. 4 yd. 9 in., and 98 mi. 127 rd. 1 ft. 9 in.

5. A man received $3648 for land at $38 an acre. What would he have received for it at $45 an acre?

6. At $3.75 a cord, what is the value of 5 piles of cordwood, each 68 feet long and 8 feet high?

7. A room is 24 ft. by 18 ft., and the walls and ceiling contain 1356 sq. ft. Find the height of the room.

8. A field is 75 rd. by 50 rd. At 65 cents a rod, what will it cost to enclose it and divide it into 6 squares?

1. How many board feet are there in 10 joists 30 ft. long and 10 by 3 in.?

2. Find 1% of $1734. $\frac{1}{2}$% of $690. $\frac{1}{4}$% of $3000.

3. How many cords are there in a pile of cord-wood 72 feet long and 6 feet high?

4. At $10 a ton, what will 5900 pounds of hay cost?

5. A hall is 15 feet long and 4 feet wide. How many tiles 3 inches square will pave it?

6. Find the number of board feet in 20 planks 16 feet long, 8 inches wide, and 1$\frac{1}{2}$ inches thick.

7. How many half-inch cubes are there in a block of stone 2 feet long and 5 inches square at the ends?

CAPACITY OF CISTERNS

Since a gallon contains 231 cubic inches, the capacity of a cistern may be determined by finding the cubic contents in cubic inches and dividing the result by 231, but this is a long process. A more convenient method is to multiply the cubic contents in cubic feet by 7.5 and subtract from the result $\frac{1}{4}$ of .01 of it. Though this method is not exact, it gives the capacity of a large cistern correct to a small fraction of a gallon.

How many gallons will a cistern hold that is 14 feet long, 7 feet wide, and 6 feet deep?

$$14 \times 7 \times 6 \times 7.5 = 4410$$

$$.01 \text{ of } 4410 = 44.10$$

$$4410 - \tfrac{1}{4} \text{ of } 44.10 = 4398.975 \text{ Ans.}$$

To find the capacity of cisterns in barrels of 31$\frac{1}{2}$ gallons, *divide the number of cubic feet by* 4.21.

LESSON 94

1. $5\frac{2}{3} \times 3\frac{1}{5} + 7\frac{3}{5}$. 2. $45\frac{3}{4} \div 8$. 3. $35\frac{3}{4} - 5\frac{1}{2} \times 4\frac{2}{3}$.

4. $147 is 8.4% of what? $178.64 is $18\frac{2}{3}$% of what?

5. At $16 per M, what is the value of 275 scantlings 18 ft. by 4 in. by 3 in.?

6. How long a piece of paper four feet wide will make two hundred twenty square yards?

7. How many gallons does a cistern hold that is 9 feet long, 6 feet wide, and 5 feet deep?

8. Find the capacity in gallons of a cistern 8 feet long, 6 feet wide, and 4 feet 6 inches deep.

9. Add 71 A. 148 sq. rd. 27 sq. yd. 131 sq. in., 121 sq. rd. 21 sq. yd. 3 sq. ft. 68 sq. in., 15 A. 68 sq. rd. 6 sq. ft. 111 sq. in., and 3 A. 25 sq. yd. 8 sq. ft. 87 sq. in.

LESSON 95

1. $5\frac{3}{5} \div 1\frac{3}{4} - 2\frac{2}{3}$. 2. $45 \times 30\frac{3}{4}$. 3. $8\frac{1}{6} - 3\frac{2}{3} \times 1\frac{1}{2}$.

4. Find the capacity in gallons of a cubical cistern six feet deep.

5. How many spoons, each weighing 1 oz. 8 pwt., can be made from 4 lb. 2 oz. 8 pwt. of silver?

6. How many barrels of water will a cistern hold that is 12 feet long, 7 feet wide, and 6 feet deep?

7. At $275 an acre, what is the value of a rectangular piece of land 14 chains long and 12 chains wide?

8. How many yards of carpet 27 in. wide will be required for a room 24 ft. 6 in. by 19 ft. 6 in., if the strips run lengthwise and there is a waste of 9 in. on each strip except the first in matching? How many yards will be required, if the strips run across the room?

1. At $1.25 a barrel, how much will a farmer receive for 96 barrels of apples?

2. $.75 × 36. $.75 × 52. $.75 × 64. $.75 × 48.

3. How many acres are there in a triangle whose base is 40 rd. and altitude 30 rd.?

4. $18\frac{3}{4} \div 3$. $24\frac{2}{3} \div 3$. $12\frac{8}{9} \div 4$. $14\frac{1}{2} \div 2$.

5. A boy bought shoes for $2, which was 12½% of his money. How much did he have left?

6. $\overline{33 \times 30} \div 9$. $(28 \times 25) \div 35$. $\overline{72 \times 9} \div 81$.

7. At the rate of 5 cents for 1 sixth of a pie, for how many pies will a women receive $3.50?

8. Find 12½% of $4800. 16⅔% of 480. 25% of $2480.

9. At the rate of 2 yards for 75 cents, how many yards of silk can be bought for six dollars?

10. A park 50 rods square has a walk one rod wide extending around it. Find the area of the walk.

11. At 65 cents for corn and 35 cents for oats, how much will a farmer receive for 75 bushels of each?

12. If 6 men can do a piece of work in 3⅔ days, in how many days can 10 men do it? 4 men? 2 men?

13. How many board feet are there in 5 joists 16 feet long, 12 inches wide, and 2 inches thick?

14. A man drew to market 3 tons of wheat, which he sold at 75 cents a bushel. What did he get for it?

15. A man sold a piece of land 12 rods long and 9 rods wide at $160 an acre. What did he receive for it?

16. What is the average weight of 6 men, if 4 of them weigh 700 pounds and the others 190 pounds apiece?

17. If a grocer buys tea at 60 cents a pound and sells it at 75 cents a pound, what is the gain per cent?

LESSON 96

1. $6\frac{7}{8} + 5\frac{2}{5} \times 4\frac{1}{6}$. 2. $64 \times 30\frac{4}{5}$. 3. $8\frac{1}{4} - 7\frac{7}{8} \div 4\frac{1}{5}$.

4. A man lost 16% of his money in speculation and had $ 8190 left. Find his loss.

5. A man received $ 30 for a load of wheat at 80 cents a bushel. Find the weight of the load.

6. How many acres are there in a rectangular plot of ground 528 ft. long and 462 ft. wide?

7. If you pay $ 4.90 for a load of coal at $ 5.60 a ton, what should be the weight of the load?

8. How many square yards are there in the walls and ceiling of a room 26 ft. by 18 ft. by 11 ft.?

9. A man drew to market 15 tons 1200 pounds of barley, which he sold at 78 cents a bushel. Find the value.

LESSON 97

1. Reduce 7 ninths of a mile to lower denominations.

2. If land is bought for $ 4500 and sold at a profit of 120%, how much is received for it?

3. Find the capacity in gallons of a cistern that is 14 ft. long, 8 ft. wide, and 7 ft. deep.

4. A farmer sold 8 elevenths of his oats and had 495 bushels left. How many bushels did he sell?

5. How many dozen eggs, at 14 cents a dozen, will pay for 126 pounds of sugar at 6 cents a pound?

6. A man sold the potatoes from 4 acres at 65 cents a bushel for $ 221. Find the average yield per acre.

7. Add 7 mi. 49 rd. 3 yd. 1 ft. 7 in., 7 rd. 1 yd. 3 in., 1 mi. 1 yd. 5 in., 15 mi. 139 rd. 1 yd. 2 ft. 9 in., 91 mi. 47 rd. 1 ft., and 217 rd. 1 yd. 1 ft. 3 in.

1. Find the number of board feet in 30 planks 18 feet by 6 inches by 2 inches.

2. Find 2% of $1835. 3% of $650. 6% of $950.

3. A man sold 5 sixths of $7\frac{1}{5}$ acres of land for $480. What did he receive per acre?

4. $\overline{45 \times 40} \div 25$. $(44 \times 24) \div 33$. $\overline{160 \times 11} \div 88$.

5. A rectangular piece of land $10\frac{1}{2}$ chains wide contains 31.5 acres. How long is it?

6. $\frac{1}{3}$ of a yard is 25% of $\frac{1}{2}$ of a foot is $33\frac{1}{3}$% of

7. At $3.75 a cord, what is the value of a pile of cordwood 400 feet long and 8 feet high?

8. $8\frac{1}{4} + 7\frac{3}{4}$. $6\frac{2}{5} + 5\frac{3}{5}$. $9\frac{5}{6} - 4\frac{1}{3}$. $8\frac{1}{2} - 3\frac{1}{8}$.

9. A boy walks 80 rods to school, and back, twice a day. In how many days does he walk 24 miles?

10. $45 is 3% of $95 is 5% of $105 is $3\frac{1}{2}$% of

11. Find the capacity of tanks: 44 in. by 28 in. by 15 in. $33''$ by $33''$ by $28''$. $35'' \times 24'' \times 22''$.

12. At $12 a ton, what will 5150 pounds of hay cost?

13. How many tiles 6 inches square will be required to pave a hall 15 feet long and 5 feet wide?

14. A grocer bought 84 dozen eggs and sold them 21 for 25 cents. How much did he receive for them?

15. How many board feet are there in 10 joists, each 14 feet long, 9 inches wide, and 2 inches thick?

16. A man sold pads at 7 cents apiece and 3 cents apiece. How much did he receive for 9 dozen of each?

17. A man drew to market $4\frac{1}{2}$ tons of potatoes, which he sold at 60 cents a bushel. What did he get for them?

18. A boy bought 9 oranges for 1 twelfth of his money. How many dozen could he have bought for $\frac{2}{3}$ of his money?

LESSON 98

1. $60\frac{5}{6} + 5\frac{3}{7} \times 4\frac{2}{3}$. 2. $27 \times 20\frac{3}{4}$. 3. $28\frac{1}{6} - 8\frac{3}{4} - 5\frac{2}{3}$.

4. \$126 is 2.8% of what? \$1225 is $16\frac{1}{3}$% of what?

5. Subtract 8 sq. yd. 126 sq. in. from 2 sq. rd. 7 sq. ft.

6. How many barrels of water will a cubical cistern hold that is 12 feet deep?

7. At \$18 per M, find the cost of 55 joists 28 ft. long, 12 in. wide, and 3 in. thick.

8. If a man receives \$2.45 for .7 of a day's work, how many days must he work to earn \$85.75?

9. If a pile of wood is 60 feet long and 8 feet high, how wide must it be to contain $22\frac{1}{2}$ cords?

10. A farmer sold 6 loads of hay averaging 2140 pounds at \$13.50 a ton. What did he receive for it?

LESSON 99

1. $9\frac{3}{4} - 2\frac{2}{3} \times 2\frac{1}{2}$. 2. $62 \times 40\frac{4}{5}$. 3. $8\frac{3}{4} \div 2\frac{5}{8} - 1\frac{5}{6}$.

4. Find 5.6% of \$575. 14.4% of 515. $10\frac{2}{3}$% of \$1800.

5. At \$22.75 per thousand, how many feet of lumber can be bought for \$147.42?

6. A rectangle of land 15.1 chains long contains $18\frac{7}{8}$ acres. How wide is the field?

7. A room is 15 ft. square, and the walls contain 590 sq. ft. Find the height of the room.

8. How many oblongs 6 in. by 4 in. can be cut from a piece of paper 15 yd. long and 3 ft. wide?

9. A merchant bought hats at \$21 a dozen. How should he mark each hat to be sold at a profit of 20%?

10. Add 8 A. 31 sq. rd. 4 sq. yd. 2 sq. ft. 96 sq. in., 9 A. 131 sq. rd. 27 sq. yd. 45 sq. in., and 7 A. 15 sq. rd.

1. Find the number of board feet in 50 joists 20 feet long and 12 by 3 inches.

2. 308 ÷ 14. 672 × 16. 945 ÷ 45. 770 ÷ 35.

3. How many acres are there in a rectangular field 80 rods long and half as wide?

4. $\overline{42 \times 30} \div 35$. $(63 \times 28) \div 49$. $\overline{125 \times 15} \div 75$.

5. If a family use 5 pints of milk a day, how many gallons do they use in 64 days?

6. 48 × 8 + 96. 74 × 2 + 74 × 8. 44 × 12 − 88.

7. At $80 an acre, what is the value of a piece of land 9 rods long and 8 rods wide?

8. Find 10% of $1840. 20% of $850. 33⅓% of $2775.

9. How many board feet are there in 40 pieces of timber 24 feet long and 5 inches square?

10. At $1.30 a day for men and 70 cents a day for boys, how much do 36 of each earn per day?

11. A man sold land at a profit of $600, which was 15% of the cost. What did he receive for it?

12. A man received $16 for 4 fifths of some ribbon at 25 cents a yard. How many yards were left?

13. If a man receives $1.10 for .4 of a day's work, how much will he receive for 10 days' work?

14. A speculator sold wool for 108% of the cost and made a profit of $2000. Find the selling price.

15. If a merchant buys silk for $900 and sells it at a profit of 16⅔%, what will he receive for it?

16. How many square yards are there in the walls of a room whose perimeter is 72 ft. and height 10 ft.?

17. A grocer bought 35 gal. of vinegar at 20 cents a gallon and sold it at 10 cents a quart. Find the gain.

LESSON 100

1. $9\frac{1}{2} - 4\frac{1}{3} - 2\frac{5}{6}$. **2.** $86 \times 50\frac{4}{7}$. **3,** $5\frac{3}{5} \times 3\frac{4}{7} \div 4\frac{4}{9}$.

4. Multiply 48 rods 4 yards 2 feet 7 inches by 8.

5. Find 15.8% of $850. .8% of $975. $40\frac{1}{3}$% of $840.

6. Find the capacity in gallons of a cistern 11 ft. long, 7 ft. wide, and 5 ft. 6 in. deep.

7. At $28 per M, what is the value of 95 pieces of lumber 24 ft. long and 8 in. square?

8. There are 27 cords in a pile of wood. If the pile is 8 ft. square at the ends, how long is it?

9. How many tiles 8 in. square will be required to pave a corridor 48 ft. long and 16 ft. wide?

10. How many silver coins, each weighing $412\frac{1}{2}$ grains, can be made from silver weighing 74 lb. 4 oz. Avoirdupois?

LESSON 101

1. Reduce $\frac{4}{7}$ of a square mile to lower denominations.

2. The area of a triangle is 48 sq. yd., and the base is 36 feet. Find the altitude.

3. At 75 cents per C, what is the value of 35 bales of hay, if the average weight is 235 pounds?

4. If a rectangular field 37.5 chains long contains 93 acres, what is the width of the field?

5. A room is 26 ft. by 19 ft. If the walls and ceiling contain 1574 sq. ft., how high is the room?

6. A farmer received $714 for 7 eighths of his wheat at 85 cents a bushel. How many bushels did he have left?

7. Add 121 sq. rd. 23 sq. yd. 7 sq. ft. 139 sq. in., 72 sq. rd. 3 sq. ft. 85 sq. in., 59 sq. rd. 13 sq. yd. 4 sq. ft. 9 sq. in., and 47 sq. rd. 19 sq. yd. 8 sq. ft. 28 sq. in.

1. Find the number of board feet in 100 joists 16 feet long and 8 by 3 inches.

2. A dealer sold fruit for 92% of the cost and lost $48. How much did he receive for it?

3. How many square yards are there in a triangle whose base is 45 feet and altitude 28 feet?

4. How many tiles 6 inches square will be required to pave a corridor 16 feet long and 5 feet wide?

5. A merchant bought 9 pieces of silk, each piece containing 24 yards, for $189. Find the price per yard.

6. If a field of $2\frac{3}{8}$ acres produces an average of 45 bushels of corn per acre, what is the total yield?

CAPACITY OF BINS

Since a bushel contains 2150.42 cubic inches, the capacity of a bin may be determined by finding the cubic contents in cubic inches, and dividing the result by 2150.42, but this is a long process. A more convenient method is to multiply the cubic contents in cubic feet by .8 and add to the result $\frac{1}{2}$ of .01 of it. Though this method is not exact, it gives the capacity of a large bin correct to a small fraction of a bushel.

How many bushels will a bin hold that is 12 feet long, 7 feet wide, and 6 feet deep?

$$12 \times 7 \times 6 \times .8 = 403.2.$$

$$.01 \text{ of } 403.2 = 4.032.$$

$$403.2 + \tfrac{1}{2} \text{ of } 4.032 = 405.216.$$

How many bushels will a bin hold that is 14 feet long, 8 feet wide, and 5 feet deep?

LESSON 102

1. $6\frac{3}{4} + 7\frac{1}{3} \div 2\frac{3}{4}$. **2.** $230 \times 40\frac{5}{6}$. **3.** $9\frac{1}{3} - 2\frac{2}{5} \times 1\frac{3}{7}$.

4. $533 is 8.2% of what? $116 is .8% of what?

5. Divide 77 rods 4 yards 2 feet 9 inches by 8.

6. Find the capacity in bushels of a bin 6 ft. long, 5 ft. wide, and 4 ft. deep?

7. A garden contains 3 eighths of an acre. If it is 121 feet wide, how long is it?

8. How many barrels of water will a cubical cistern hold that is 8 feet deep?

9. How many bushels will a bin hold that is 13 feet long, 8 feet wide, and 5 feet deep?

10. A bin 7 feet square and 5 feet deep is full of oats. What is the value of them at 36 cents a bushel?

LESSON 103

1. $5\frac{3}{8} \times 7\frac{3}{4} + 56\frac{4}{5}$. **2.** $250 \times 30\frac{7}{8}$. **3.** $7\frac{1}{2} \times 3\frac{3}{4} + 15\frac{3}{5}$.

4. Find the capacity in bushels of a bin 15 feet long, 9 feet wide, and 6 feet deep.

5. Add 120 rd. 7 yd. 5 in., 240 rd. 1 ft. 8 in., 8 yd. 1 ft. 9 in., and 180 rd. 5 yd. 8 in.

6. Find the capacity in bushels of a cubical bin 6 feet deep. Of a cubical bin 8 feet deep.

7. How high must wood be piled, covering 1 square rod of ground, to make 25 cords 67 cubic feet?

8. How many yards of carpet 1 yard wide will be required for a room 20 ft. by 17 ft., if the strips run lengthwise and there is a waste of 6 in. on each strip except the first in matching? How many yards will be required, if the strips run across the room?

1. At $320 an acre, what is the value of a piece of land 8 rods square?

2. Find 1% of $728. ½% of $3700. ⅓% of $1800,

3. A man discharged 25% of a debt by paying $240. How much did he still owe?

4. At $8 a ton, what will 4725 pounds of straw cost?

5. A rectangular field 24 chains long contains 48 acres. How long is the field?

6. $3.24 ÷ $.03. $4.80 ÷ $.08. $18.30 ÷ $.06.

7. What is the profit on 10 dozen eggs bought at $.22 a dozen and sold 10 for 25 cents?

8. $\overline{55 \times 35} \div 25$. $(66 \times 28) \div 44$. $\overline{180 \times 15} \div 90$.

9. How many board feet are there in 10 pieces of lumber 18 feet long and 4 inches square?

10. Find 12½% of $720. 16⅔% of 4200. 25% of $864.

11. Find the capacity of tanks: 33 in. by 30 in. by 21 in. 42″ by 22″ by 12″. 33″ × 28″ × 11″.

12. Find the value of 80 quarts of nuts at $3 a bushel.

13. A man sold 5 sixths of his sheep and had 24 left. Find the value of those sold at $3 a head.

14. At what price per pound will 15 pounds of butter pay for 75 pounds of sugar at 5 cents a pound?

15. If a grocer buys flour at $4.50 a barrel, at what price must he sell it to make a profit of 20%?

16. How many rods of fence will enclose a square quarter-section and divide it into 4 equal squares?

17. Find the number of board feet in 24 pieces of lumber 25 feet long, 8 inches wide, and 6 inches thick.

18. If a man buys 25,000 pounds of wool at 22 cents a pound and sells it at 25 cents, what is his profit?

LESSON 104

1. Find the capacity in bushels of a bin 8 feet long, 7 feet wide, and 5 feet deep.

2. A speculator sold land for $1155 and lost 1 eighth as much as it cost. Find the loss.

3. By selling a house for $975 more than it cost, a man gained 15%. What did he receive for it?

4. How many square yards are there in the walls and ceiling of a room 28 ft. by 20 ft. by 11 ft.?

5. Subtract 3 A. 24 sq. rd. 19 sq. yd. 7 sq. ft. 94 sq. in. from 7 A. 46 sq. rd. 12 sq. yd. 42 sq. in.

6. At $135 an acre, what is the value of a rectangular piece of land 26 chains long and 18 chains wide?

7. A man sold $\frac{1}{9}$ of his berries at 8 cents a quart for $14. At 9 cents a quart, what were the rest worth?

LESSON 105

1. Reduce 6 sevenths of a mile to lower denominations.

2. Find the capacity in gallons of a cistern 8 feet square and 5 feet 6 inches deep.

3. How many posts are required for a fence 40 rods long, if the posts are set 6 feet apart?

4. There are 20 square yards of blackboard in a schoolroom. If the board is 45 ft. long, how wide is it?

5. Using planks $2\frac{1}{2}$ inches thick, how many feet of lumber will be required for a floor 38 ft. by 18 ft.?

6. A dealer bought 1600 long tons of coal at $3.85 a ton and sold it at $4.65 a short ton. Find his profit.

7. A yard 100 ft. square is enclosed by a wall 8 ft. high and 2 ft. thick. How many cubic feet of masonry, actual measure and masons' measure, does it contain?

1. A lady bought 12½ yards of silk at $1.60 a yard. What did it cost?

2. Find 3% of $825. 4% of $2225. 6% of 2500 men.

3. About how many bushels of wheat will a cubical bin hold that is 10 feet deep?

4. 125 × 54. 250 × 39. 375 × 64. 625 × 96.

5. Find the number of board feet in 50 scantlings 14 feet long and 4 by 3 inches.

6. $75 is 3% of $64 is 4% of $85 is 5% of

7. If 2 sevenths of a piece of cloth is worth $32, what is the value of the other part?

8. $12.75 ÷ $.03. $16 ÷ $.05. $24.64 ÷ $.08.

9. At $3.75 a cord, what is the value of a pile of cordwood 160 feet long and 8 feet high?

10. $\overline{49 \times 40} \div 35$. $(63 \times 35) \div 49$. $\overline{48 \times 20} \div 160$.

11. A farmer sold 144 barrels of apples at $1.25 a barrel. How much did he receive for them?

12. At $12 a ton, what will 7300 pounds of hay cost?

13. A boy sold 5 sixths of his papers at 3 cents apiece for $1.50. How many did he have left?

14. How many tiles 6 in. by 4 in. will be required to pave a hall 15 feet long and 4 feet wide?

15. Find the capacity of tanks: 44 in. by 21 in. by 18 in. 36″ by 33″ by 28″. 35″ × 27″ × 22″.

16. How many board feet are there in 5 pieces of timber 30 feet long and 8 inches square at the ends?

17. A farmer sold the potatoes from 3 acres at 50 cents a bushel for $135. What was the average yield?

18. A dealer bought 100 barrels of flour at $4.20 a barrel and sold it at a profit of 16⅔%. Find the gain.

LESSON 106

1. Find the value of 985 lb. of straw at $8.40 a ton.

2. A clerk spends $600 a year, which is 48% of his salary. How much does he save?

3. At $22 per M, what is the value of 68 joists 22 ft. long, 8 in. wide, and 3 in. thick?

4. How many brick 8 in. by 4 in. will be required to pave a walk 16 rods long and 6 feet wide?

5. How many barrels of water will a cistern hold that is 15 ft. 4 in. by 8 ft. 3 in. by 3 ft. 6 in.?

6. A brick wall contains 1056 cubic feet. If it is 18 in. thick and 16 ft. high, how long is it?

7. At 45 cents a cubic yard, what will it cost to excavate a cellar 38 ft. long, 27 ft. wide, and 8 ft. deep?

LESSON 107

1. $8\frac{1}{3} - 9\frac{1}{3} \div 2\frac{5}{8}$. 2. $193\frac{5}{6} \div 3$. 3. $9\frac{2}{3} - 4\frac{5}{6} + 7\frac{3}{4}$.

4. $189 is 4.2% of what? $1250 is 16⅔% of what?

5. A has $385, which is equal to 44% of B's money. How much money have both?

6. How many bushels of wheat will a bin hold that is 8 feet square and 6 feet deep?

7. A room is 18 ft. by 15 ft., and the walls contain 561 sq. ft. Find the height of the room.

8. How many bushels of oats will be required to sow 7 A. 96 sq. rd., allowing 3 bu. 1 pk. to an acre?

9. Add 180 rd. 4 yd. 2 ft. 11 in., 75 rd. 4 yd. 2 ft. 9 in., 268 rd. 5 yd. 1 ft. 6 in., and 4 yd. 2 ft. 6 in.

10. At 45 cents a square yard, it cost $19.80 to plaster a ceiling. If the room is 22 ft. long, how wide is it?

1. At $160 an acre, what is the value of a piece of land 11 rods square?

2. Find the number of board feet in 10 pieces of lumber 24 ft. long and 6 in. square.

3. If a man buys 3 sheep at $4 a head and 2 at $9 a head, what is the average price paid?

4. A square field requires 320 rods of fence to enclose it. How many acres are there in the field?

TIME BETWEEN TWO DATES

Find the time by compound subtraction from June 28, 1892, to March 12, 1898.

$$\begin{array}{rrr} 1898 & 3 & 12 \\ 1892 & 6 & 28 \\ \hline 5 & 8 & 14 \end{array}$$

To find the time between two given dates:

RULE. — *Subtract as in denominate numbers, reckoning 12 months a year and 30 days a month.*

January, March, May, July, August, October, and December have each 31 days. April, June, September, and November have each 30 days.

Centennial years exactly divisible by 400, and other years exactly divisible by 4, are leap years, when February has 29 days. In other years it has 28.

As some of the months have 30 days, some 31, and one 28 or 29, in some cases this method is not exact. When the exact time is desired, we count the number of whole years, and then find the remaining number of days. If the time is less than a year, it is expressed wholly in days.

LESSON 108

1. Find the time by compound subtraction from Nov. 24, 1872, to March 8, 1895.

2. Find the exact number of days from July 12, 1900, to May 15 of the next year.

3. Find the capacity in bushels of a bin 18 feet long, 12 feet wide, and 8 feet deep.

4. Find the exact time in years and days from January 12, 1885, to December 24, 1892.

5. At $26 per M, what is the value of 85 pieces of lumber 16 ft. long, 6 in. wide, and 4 in. thick?

6. How many days will 150 bushels of oats last eight horses, if each horse is allowed ten quarts a day?

7. A farmer received $129.60 for 6 loads of potatoes, at $.60 a bushel. Find the average weight of the loads.

LESSON 109

1. Reduce 5 sevenths of an acre to lower denominations.

2. Find the capacity in gallons of a cubical cistern 15 feet deep.

3. Find the exact time in years and days from April 14, 1888, to October 24, 1893.

4. An agent sold a section of land at $18 an acre on 5% commission. What was his commission?

5. A room is 18 ft. square, and the walls and ceiling contain 1080 sq. ft. How high is the room?

6. A man sold 5 loads of hay at $15 a ton, receiving $80.25 for it. Find the average weight of the loads.

7. A cellar wall is 38′ × 30′ × 8′ outside measure. If it is 18 in. thick, how many cubic feet of masonry, actual measure and masons' measure, does it contain?

1. How many board feet are there in 40 planks 15 feet long and 8 by 2 inches?

2. Find 1% of $2585. $\frac{1}{8}$% of $1650. $\frac{1}{4}$% of $1260.

3. A farmer sold 64 lambs at $6.25 a head. How much did he receive for them?

4. $87 \times 9 + 87$. $38 \times 4 + 38 \times 6$. $78 \times 11 - 78$.

5. How many board feet are there in 20 scantlings 18 feet long and 4 by 2 inches?

6. $.25 × 18. $.25 × 35. $.25 × 46. $.25 × 62.

7. How many acres are there in a triangle whose base is 32 rods and altitude 24 rods?

8. $.75 × 32. $.75 × 48. $.75 × 56. $.75 × 64.

9. What per cent of 45 is 15? Of 15 is 45? Of 2 days is 16 hours? Of a yard is a foot?

10. Find 10% of $860. 20% of $3500. 33$\frac{1}{3}$% of $480.

11. A merchant sold 32 suits of clothes at $8.75 apiece. How much did he receive for them?

12. At $16 a ton, what will 4175 pounds of hay cost?

13. If a merchant buys hats at $30 a dozen, at what price must he sell each hat to gain 20%?

14. How many tiles 6 inches square will be required to pave a hall 17 feet long and 5 feet wide?

15. If a man sells sheep at $6 a head and lambs at $4 a head, how much does he receive for 38 of each?

16. How many cubic feet of water are there in a cistern 10 feet square, if the water is 7 feet deep?

17. Find the number of board feet in 30 pieces of lumber 20 feet long, 6 inches wide, and 4 inches thick.

18. How many square inches will be cut off in a strip 4 in. wide all around a sheet of paper 9 ft. by 33 in.?

LESSON 110

1. How many bushels of oats will a cubical bin hold that is nine feet deep?

2. Find the exact number of days from the 18th day of June last year to to-day.

3. At $18 per M, what is the value of 285 fence boards 14 ft. long and 8 in. wide?

4. At $185 an acre, what is the value of a square field whose perimeter is 256 rods?

5. At 85 cents a square yard, what will it cost to cement a cistern 14 ft. by 10 ft. by 7 ft.?

6. A man bought a load of coal at $6.40 a ton, paying $7.84 for it. Find the weight of the load.

7. A grocer paid $486 for potatoes at 75 cents a bushel and sold them at 95 cents a bushel. Find the gain.

LESSON 111

1. Find 12.8% of $1250. .6% of $1450. 115% of $620.

2. Find the capacity in barrels of a cistern 9 feet square and 7 feet deep.

3. If a piece of paper one yard wide contains 1296 2-inch squares, how long is it?

4. A man sold $\frac{1}{15}$ of his wheat for $68.75. At the same price, what is half the remainder worth?

5. How many coins, each weighing 412½ grains, can be made from silver weighing 24 lb. 12. oz. Avoirdupois?

6. How many yards of carpet 27 in. wide will be required for a room 15 ft. 9 in. by 13 ft. 6 in., if the strips run lengthwise and there is a waste of 10 in. on each strip except the first in matching? How many yards will be required, if the strips run across the room?

1. At $2.40 a yard, what will a merchant receive for 37½ yards of carpet?

2. Find 2% of $950. 5% of $850. 6% of 825 yd.

3. How many bushels of oats will a cubical bin hold that is 5 feet deep?

4. $45 is 75% of $45 is 37½% of $45 is 62½% of

5. Find the number of board feet in 5 beams 15 feet long and 12 inches square.

6. $1.60 × 37½. $4.80 × 62½. $5.60 × 87½.

7. At $80 an acre, what is the value of a piece of land 8 rods long and 7 rods wide?

8. $\overline{48 \times 27} \div 36$. $(63 \times 42) \div 49$. $\overline{40 \times 32} \div 160$.

9. A farmer sold 50 sheep and had 9 elevenths of his flock left. How many did he have left?

10. ⅙ of a yard is 50% of ¼ of a foot is 50% of

11. A man received $9.60 for berries at 10 cents a quart. How many crates of 32 quarts did he sell?

12. At $10 a ton, what will 3340 pounds of hay cost?

13. How many tiles 6 in. by 4 in. will be required to pave a corridor 25 feet long and 5 feet wide?

14. If a merchant buys gloves at $9 a dozen, at what price per pair must he sell them to gain 33⅓%?

15. How many board feet are there in 10 planks, each 18 feet long, 8 inches wide, and 1½ inches thick?

16. From 6¾ acres of land a man sold ¾ of an acre for $75. At that rate, what was the whole piece worth?

17. How many square yards are there in the walls of a room whose perimeter is 108 ft. and height 12 ft.?

18. A man sold 30 sheep, which was equal to 16⅔% of the number he had left. How many did he have at first?

LESSON 112

1. Find the time by compound subtraction from Oct. 28, 1893, to April 8, 1899.

2. How many gallons will a cistern hold that is 13 ft. long, 8 ft. wide, and 7 ft. deep?

3. How many bricks will it take to build a wall 40 ft. long, 22 ft. high, and 12 in. thick?

4. How many square yards are there in the walls and ceiling of a room 32 ft. by 24 ft. by 12 ft.?

5. A man spent 76% of his salary and had $300 left. Find the amount of his salary and the sum spent.

6. A speculator sold wool at 24¾ cents a pound and received $7029 for it. How many pounds did he sell?

7. How many feet of wire will it take to build a fence of 4 wires around a field 36 rd. long and 28 rd. wide?

LESSON 113

1. Reduce $\frac{4}{7}$ of a square mile to lower denominations.

2. $342 is 7.6% of what? $704 is $14\frac{2}{3}$% of what?

3. At 65 cents a hundred, what is the value of 85 bales of hay averaging 185 lb.?

4. A rectangle of land 14.4 chains wide contains 26.28 acres. Find the length in rods.

5. At $18 per M, what will the boards cost for a tight board fence 18 rd. long and 4 ft. high?

6. How many tiles 8 in. by 6 in. will be required to pave a corridor 32 ft. long and 12 ft. wide?

7. Find the capacity in bushels of a bin 9 feet 6 inches long, 6 feet wide, and 5 feet 6 inches deep.

8. A lady spent ¼ of her money for a cloak, ⅕ of it for a dress, and had $60.50 left. How much did she spend?

1. If 1 bushel 2 pecks 2 quarts of nuts cost $3, what is the price per bushel?

2. Find 1% of $355. ½% of $5800. ⅛% of $4080.

3. Find the number of board feet in 60 planks 20 feet long and 12 by 2 inches.

4. $4.70 is 10% of ⅛ is 25% of $8.15 is 16⅔% of

5. A rectangular piece of land 25 chains long contains 52.5 acres. How wide is it?

6. $24 is .4% of $27 is .5% of $45 is .6% of

7. A man raised 525 bushels of wheat on 25 acres. What was the average yield per acre?

8. $1.25 × 68. $3.75 × 56. $6.25 × 64.

9. How many square yards are there in the walls of a room 13½ feet square and 10 feet high?

10. $\overline{60 \times 30} \div 9$. $(66 \times 42) \div 36$. $\overline{60 \times 36} \div 45$.

11. How many board feet are there in 10 joists 18 feet long, 6 inches wide, and 3 inches thick?

12. At $8 a ton, what will 5450 pounds of straw cost?

13. Find the capacity of tanks: 44 in. by 28 in. by 12 in. 39″ by 33″ by 22″. 35″ × 30″ × 22″.

14. A man bought a section of land at $10 an acre and sold it at a profit of 25%. Find the gain.

15. If a man receives $4.20 for 14 hours' work, how much will he receive for 15 days' work of 10 hours?

16. A boy bought a pair of shoes for $2.50, which was 62½% of his money. How much did he have left?

17. How many tiles 4 inches square will be required to pave a corridor 20 feet long and 5 feet wide?

18. A farmer drew to market 18 tons of wheat, which he sold at 75 cents a bushel. What did he get for it?

LESSON 114

1. $8\frac{5}{6} + 7\frac{2}{3} - 5\frac{3}{4}$. 2. $94 \times 30\frac{4}{5}$. 3. $9\frac{5}{6} - 8\frac{1}{3} \div 2\frac{1}{2}$.

4. Find 12.3% of $72. .7% of $950. 106% of $470.

5. What are the prime factors of 784, 585, and 1764?

6. How many bushels will a bin hold that is 9 feet square and 7 feet deep?

7. At $3.65 a cord, what is the value of a pile of cord-wood 120 ft. long and 6 ft. high?

8. A man discharged forty-five per cent of a debt by paying $720. How much did he still owe?

9. At $45 per M, what is the value of 28 pieces of lumber 24 feet long and 15 inches square?

10. A rectangle of land is 96 rd. by 64 rd. How many rods of fence enclose it and divide it into 6 squares?

LESSON 115

1. $56.05 is 5.9% of what? $784 is $8\frac{1}{6}$% of what?

2. Find the capacity in barrels of a cubical cistern that is 9 feet deep.

3. If a pile of cord-wood is 6 feet high, how long must it be to contain 21 cords?

4. Find the number of square yards in a triangle whose base is 45 ft. and altitude 36 ft.

5. A room is 24 ft. by 18 ft., and the walls contain 924 sq. ft. Find the height of the room.

6. How many days will 180 bushels of oats last 8 horses, if each horse is allowed 12 quarts a day?

7. A cellar wall is $42' \times 36' \times 9'$ inside measure. If it is 2 ft. thick, how many cubic feet of masonry, actual measure and masons' measure, does it contain?

1. If a roll of paper 44 yards long contains 33 sq. yd., how wide is it?

2. Find 10% of $2475. $16\frac{2}{3}\%$ of $540. 25% of $4860.

3. Find the number of board feet in 40 joists 15 feet long and 6 by 2 inches.

4. $45 \times 8 + 90$. $68 \times 7 + 68 \times 3$. $56 \times 11 - 56$.

5. About how many bushels of wheat will a bin hold that is 10 ft. by 6 ft. by 5 ft.?

6. $9\frac{1}{2} + 6\frac{1}{6}$. $8\frac{3}{8} + 5\frac{1}{4}$. $8\frac{2}{3} - 4\frac{1}{6}$. $14\frac{1}{3} - 8\frac{2}{9}$.

7. At $320 an acre, what is the value of a piece of land 13 rods long and 5 rods wide?

8. $120 is 8% of $9.60 is 4% of $70 is $3\frac{1}{2}\%$ of

9. How many square yards are there in a triangle whose base is 36 ft. and altitude 30 ft.?

10. 8 rods are — yards. 8 rods are — feet.

11. How many board feet are there in 50 planks 12 feet long, 5 inches wide, and 2 inches thick?

12. $4.20 ÷ $.06. $24.32 ÷ $.04. $15.75 ÷ $.05.

13. If a merchant buys caps at $3.60 a dozen, for how much must he sell each one to gain $33\frac{1}{3}\%$?

14. A man sold a piece of land for $7500 and made a profit of 25%. Find the cost and the profit.

15. A man received $64 for 8 ninths of his berries at 10 cents a quart. How many quarts did he keep?

16. At $1 a cubic yard, it cost $72 to excavate a cellar 6 yards square. How deep was the cellar?

17. If there are 15 yards in a piece of ribbon, into how many pieces 9 inches long could it be cut?

18. At 50 cents a rod, what will it cost to enclose a square quarter-section and divide it into 4 squares?

LESSON 116

1. Find the capacity in gallons of a cistern 11 feet square and 6 feet deep.

2. Find the exact number of days from May 28 to December eighth of the same year.

3. At $24 per M, what is the value of 45 pieces of lumber 18 ft. by 6 in. by 5 in.?

4. How many spoons, each weighing 2 oz. 16 pwt., can be made from 17 lb. 3 oz. 4 pwt. of silver?

5. How many oblongs 9 in. by 4 in. can be cut from a piece of paper 7 yards long and 4 feet wide?

6. A farmer lost 32% of his wheat by fire and had 1649 bushels left. How many bushels did he lose?

7. A man bought a section of land at $15 an acre and sold it for 150% of the cost. What was his profit?

LESSON 117

1. $9\frac{3}{8} + 6\frac{3}{4} \times 2\frac{8}{9}$. 2. $174 \times 20\frac{4}{5}$. 3. $8\frac{5}{6} + 8\frac{3}{4} \div 2\frac{5}{8}$.

4. Reduce 8 ninths of a mile to lower denominations.

5. Divide 7000.007 by 7 eighths and express the quotient in three forms.

6. How many bushels of wheat will a cubical bin hold that is 12 feet deep?

7. If a piece of ground is 225 ft. long, how wide must it be to contain 5 eighths of an acre?

8. At $19 a thousand feet, what is the value of 175 2-inch joists 24 feet long and 8 inches wide?

9. If a man receives $2.70 for .6 of a day's work, how much should he receive, if he works 14.4 days?

10. Add 312 rd. 4 yd. 2 ft. 9 in., 4 mi. 5 yd. 8 in., 19 mi. 147 rd. 2 ft. 3 in., and 185 rd. 5 yd. 2 ft. 6 in.

1. If a cubic foot of ice weighs 60 pounds, how much does a cubic yard weigh?

2. Find 3% of $2200. 4% of $675. 5% of 4000 bu.

3. A man discharged 40% of a debt by paying $300. How much did he still owe?

4. 434 ÷ 14. 690 ÷ 15. 656 ÷ 16. 651 ÷ 21.

5. If a farm of 62½ acres is sold at $48 an acre, what is received for it?

6. $\overline{63 \times 56} \div 49$. $(45 \times 40) \div 75$. $\overline{48 \times 40} \div 160$.

7. About how many gallons will a cistern hold that is 12½ ft. by 8 ft. by 6 ft.?

8. $.75 × 32. $.75 × 48. $.75 × 56. $.75 × 64.

9. Find the number of board feet in 20 joists 15 feet long and 1 foot by 3 inches.

10. $.85 is 10% of ¾ is 12½% of $.60 is 16⅔% of

11. How many tiles 6 inches square will be required to pave a hall 18 feet by 5 feet?

12. At $12 a ton, what will 8500 pounds of hay cost?

13. A man spent 16⅔% of his money for a horse that cost $150. How much did he have left?

14. If a merchant sells 96 pairs of shoes at $3.75 a pair, what will he receive for them?

15. A man sold 1 seventh of his sheep at $3.75 a head for $75. How many did he have left?

16. How many board feet are there in 60 planks 20 feet long, 9 inches wide, and 2 inches thick?

17. How many square inches will be cut off in a strip 1 inch wide all around a piece of paper 6 ft. square?

18. If a grocer buys flour at $5 a barrel, at what price must he sell it to gain 15%?

LESSON 118

1. A rectangular field thirty rods wide contains four and a half acres. Find the length.

2. Find the exact number of days from June 24, 1895, to the fifth of the following March.

3. A square park 24 rods long has a walk 6 feet wide around it. Find the area of the walk.

4. A commission merchant sold 185 bbl. of apples at $1.15 a barrel. Find his commission at 5%.

5. A man sold 9 elevenths of his wheat and had 170 bushels left. How many bushels did he sell?

6. A room is 28 ft. by 18 ft., and the walls and ceiling contain 1562 sq. ft. How high is the room?

7. Find the capacity in bushels of a bin 12 feet 6 inches long, 8 feet wide, and 7 feet 6 inches deep.

LESSON 119

1. $6\frac{3}{4} \times 2\frac{8}{9} + 14\frac{1}{6} \div 2\frac{1}{8}$. 2. $4\frac{1}{6} \times 1\frac{4}{5} - 8\frac{2}{7} \div 2\frac{2}{7}$.

3. How much wheat will be required to sow 8 A. 64 sq. rd., allowing 2 bu. 2 pk. to an acre?

4. A farmer sold 8750 lb. of hay at $15 a ton, and twice as much at $13 a ton. Find the value of it.

5. At 85 cents a square yard, it cost $112.20 to pave a walk. If the walk is 6 ft. wide, how long is it?

6. How many square inches will be cut off in a strip 2 in. wide all around a sheet of paper 12 yd. by 5 ft.?

7. How many yards of carpet 27 in. wide will be required for a room 21 ft. 8 in. by 18 ft. 10 in., if the strips run lengthwise and there is a waste of 9 in. on each strip except the first in matching? How many yards will be required, if the strips run across the room?

1. Find the number of board feet in 40 joists 20 feet long and 8 by 3 inches.

2. Find 1% of \$4275. $\frac{1}{2}\%$ of \$550. $\frac{1}{4}\%$ of \$2060.

3. At \$3.75 a barrel, how much will a miller receive for 480 barrels of flour?

4. $\overline{75 \times 12} \div 9$. $(39 \times 25) \div 65$. $\overline{80 \times 25} \div 125$.

5. A pile of wood 8 feet wide and 8 feet high contains 15 cords. How long is it?

6. \$50 is 4% of \$65 is 5% of \$57 is 6% of

7. At \$160 an acre, what is the value of a piece of land 15 rods long and 10 rods wide?

8. \$12.50 × 24. \$37.50 × 32. \$62.50 × 48.

9. At \$3.60 a cord, what is the value of a pile of cordwood 100 feet long and 8 feet high?

10. 125 × 36. 250 × 27. 375 × 48. 625 × 56.

11. If a grocer sells potatoes at \$1.25 a barrel, for how many barrels does he receive \$60?

12. At \$16 a ton, what will 6750 pounds of hay cost?

13. How many cubic yards of earth must be excavated for a cellar 30 ft. by 18 ft. by 6 ft.?

14. How many board feet are there in 30 planks 24 feet long, 10 inches wide, and 3 inches thick?

15. Find the capacity of tanks: 44 in. by 36 in. by 14 in. 42″ by 22″ by 15″. 36″ × 28″ × 22″.

16. A man sold 225 sheep, which was equal to 75% of the number he had left. How many had he at first?

17. How many pounds of butter, at 30 cents a pound, will pay for 180 pounds of sugar at 6 cents a pound?

18. A rectangular field 32 rods long has a perimeter of 120 rods. How many acres does the field contain?

LESSON 120

1. What are the prime factors of 343, 539, and 1155?

2. How many cans $6'' \times 4'' \times 3''$ can be packed in a cubical box one yard deep?

3. Find the capacity in barrels of a cistern 12 ft. 3 in. by 6 ft. 4 in. by 5 ft. 6 in.

4. A man bought land for $5180, which was 28% of his money. How much did he have left?

5. A man received $336 for 8 ninths of his oats at 35 cents a bushel. How many bushels had he left?

6. How many square yards are there in the walls and ceiling of a room 32 ft. by 26 ft. by 12 ft.?

7. At 65 cents a hundred, what is the value of 36 bales of hay, the average weight being 195 pounds?

LESSON 121

1. Reduce 4 ninths of an acre to lower denominations.

2. A bin 10 ft. square and 6 ft. deep is full of wheat. How many bushels are there?

3. A rectangular farm contains 271⅞ acres. If it is 62.5 chains long, how wide is it?

4. A grocer bought tea for $275 and sold it at a profit of 24%. What did he receive for it?

5. A man bought a load of coal at $5.60 a ton, paying $5.46 for it. Find the weight of the load.

6. Find the profit on 6 crates of berries, 32 qt. each, if bought at 8 cents and sold at 12½ cents a quart.

7. A cellar wall is $22' \times 18' \times 6'$ outside measure. If it is 18 in. thick, how many cubic feet of masonry, actual measure and masons' measure, does it contain?

1. How many board feet are there in 20 beams 15 feet long and 8 by 6 inches?

2. Find 12½% of $5600.   33⅓% of $3645.

3. How many acres are there in a triangle whose base is 50 rd. and altitude 32 rd.?

4. 14 × 2½.   16 × 4½.   18 × 3½.   16 × 3½.

5. About how many bushels of wheat will a bin hold that is 10 ft. by 8 ft. by 5 ft.?

6. $18 is 10% of $15 is 12½% of $24 is 25% of

7. A piece of land that cost $500 was sold at a loss of 15%. What was received for it?

8. $40\frac{5}{9} \div 5$. $24\frac{1}{3} \div 3$. $56\frac{8}{9} \div 4$. $36\frac{1}{4} \div 3$.

9. At $3.50 a rod, what will it cost to build a fence one hundred sixty-five feet long?

10. A man sold a horse for $450 and lost 25% on the cost. How much did he pay for the horse?

11. At 60 cents a bushel, a man received $72 for 3 loads of potatoes. Find the average weight.

12. A rectangular field 12 rods wide contains 3 fourths of an acre. Find the length in feet.

13. At 38 cents a bushel, what will a farmer receive for oats weighing 1 ton 12 hundred pounds?

14. How many tiles 6 in. by 4 in. will be required to pave a hall 25 feet long and 5 feet wide?

15. If a grocer sells 3 pounds of rice for 25 cents, for how many pounds will he receive $5.25?

16. If a boy buys oranges at 40 cents a dozen, at what price each must he sell them to gain 20%?

17. A field is 75 rd. by 50 rd. How many rods of fence will enclose it and divide it into 6 squares?

LESSON 122

1. A man discharged 65% of a debt by paying $416. How much did he still owe?

2. At $18 per M, what is the value of 145 scantlings 24 ft. long and 4 in. square?

3. A park 95 rods wide has a perimeter of 446 rods. How many acres does it contain?

4. A room is 18 ft. square, and the walls contain 756 sq. ft. Find the height of the room.

5. At 2 thirds of a cent a yard, what will it cost to put 4 wires around a field 28 rods square?

6. If $8.85 is 1 twelfth of a man's money, how much can he spend and have 2 thirds of his money left?

7. A man bought 750 long tons of coal at $4.80 a ton and sold it at $4.80 a short ton. Find the profit.

LESSON 123

1. Find the capacity in bushels of a cubical bin that is 14 feet deep.

2. A pile of cord-wood is 6 feet high. How long must it be to contain 25½ cords?

3. A railroad 16 miles long has four tracks. How many rails 30 ft. long were required for it?

4. How many days will 180 bushels of oats last 12 horses, if each horse is allowed 12 quarts a day?

5. A merchant paid $270 for silk at 75 cents a yard and sold it at $1.15 a yard. Find his profit.

6. A grocer bought flour for four hundred eighty dollars. For how much must he sell it to gain 15%?

7. A farmer sold 544 bushels of potatoes, which was .64 of his whole crop. How many bushels had he left?

1. At $80 an acre, what is the value of a piece of land 9 rods square?

2. Find 2% of $2050. 5% of $950. 6% of 5500 men.

3. A rectangular field 12 chains wide contains 25.2 acres. How long is it?

4. $98 \times 9 + 98$. $87 \times 8 + 87 \times 2$. $48 \times 12 - 96$.

5. Find the number of board feet in 80 scantlings 12 feet long and 4 by 3 inches.

6. $\overline{75 \times 27} \div 45$. $(70 \times 28) \div 49$. $\overline{40 \times 28} \div 160$.

7. If a pile of cord-wood is 8 feet high, how long must it be to contain $9\frac{1}{2}$ cords?

8. $750 \div 15$. $756 \div 18$. $589 \div 19$. $2075 \div 25$.

9. A rectangular piece of paper 4 feet wide contains 120 square yards. How long is it?

10. A man bought flour at $4 a barrel for $240 and sold it at $4.75 a barrel. Find the gain.

11. How many board feet are there in 50 beams 20 feet long, 6 inches wide, and 5 inches thick?

12. Find the capacity of tanks: 44 in. by 24 in. by 14 in. $42''$ by $22''$ by $18''$. $36'' \times 35'' \times 22''$.

13. A man bought a coat for $12.50, which was 25% of his money. How much money did he have left?

14. If each of 7 horses eats 12 quarts of oats a day, in how many days will they eat 168 bushels?

15. If a merchant sells 54 yards of ribbon in pieces 27 inches long, how many pieces does he sell?

16. A man bought some cows at $35 a head, and as many more at $45 a head. What was the average price?

17. At $1.75 a rod, it cost $84 to build a fence around a square garden. Find the length of the garden.

LESSON 124

1. Multiply 72 sq. rods 18 sq. yards 7 sq. feet by 6.

2. Find the exact number of days from August 13, 1899, to March 23, 1900.

3. Find the capacity in bushels of a bin 11 ft. 3 in. by 7 ft. 4 in. by 5 ft. 6 in.

4. At $56 per M, what is the value of 24 pieces of lumber 16 ft. long and 18 in. square?

5. How many acres are there in a field 18 chains 75 links long and 14 chains 80 links wide?

6. Add 7 sq. rd. 28 sq. yd. 116 sq. in., 22 sq. yd. 4 sq. ft., and 9 sq. rd. 19 sq. yd. 7 sq. ft. 129 sq. in.

7. How long a rectangle 18 rods wide contains as many acres as a square 24 rods on each side?

LESSON 125

1. Find the capacity in gallons of a cubical cistern that is seven feet deep.

2. A rectangular piece of land containing 4.25 acres is 21.25 rods wide. How long is it?

3. Add 8 rd. 4 yd. 10 in., 6 rd. 2 ft. 7 in., 12 rd. 3 yd. 2 ft. 9 in., and 16 rd. 2 ft. 7 in.

4. A room is 13 ft. by 11 ft., and the walls and ceiling contain 527 sq. ft. How high is the room?

5. If a grocer sells .375 of a barrel of flour for $1.95, for how many barrels will he receive $49.40?

6. At $2.85 a cord, what is the value of a pile of cord-wood two hundred feet long and six feet high?

7. At eighteen dollars a thousand, what is the value of 475 fence-boards twelve feet long and eight inches wide?

1. A man had 600 sheep and sold 25% of them. How many did he have left?

2. Find 1% of $744. ½% of $3500. ⅓% of $2775.

3. A man discharged 25% of a debt by paying $150. How much did he still owe?

4. $15 is 4% of $28 is 5% of $21 is 6% of

5. How many board feet are there in 45 scantlings 15 feet long and 4 inches square?

6. $.25 × 31. $.25 × 37. $.25 × 39. $.25 × 42.

7. If a man receives $1.50 for .6 of a day's work, how much can he earn in 10.5 days?

8. At $8 a ton, what will 6375 pounds of straw cost?

9. If a conductor collects $38 in 5-cent fares in a day, how many people ride on his car?

10. Find the number of board feet in 40 pieces of lumber 20 feet long and 6 inches square.

11. How many square yards are there in a triangle whose base is 45 ft. and altitude 32 ft.?

12. How many square yards are there in the walls of a room 15 feet square and 9 feet high?

13. How many tiles 6 inches square will be required to pave a hall 19 feet long and 5 feet wide?

14. A farmer sold apples at $2.75 a barrel, receiving $165 for them. How many barrels did he sell?

15. If a bookseller sells pads at 6 cents and 4 cents, how much does he receive for 8 dozen of each?

16. If pens that cost 40 cents a gross are sold at the rate of 2 for a cent, find the profit on a gross.

17. At 75 cents a rod, what will it cost to build a fence on both sides of a road 3 fourths of a mile long?

LESSON 126

1. Find 8.4% of $950. .8% of $4550. $33\frac{1}{3}\%$ of $864.

2. What number contains all the prime factors of 35, 49, and 77, but no others?

3. How many bushels of oats will a bin hold that is 12 feet square and 8 feet deep?

4. How many cords are there in a pile of wood 28 ft. square on the ground and 10 ft. high?

5. A man bought a coat for $38, which was 4 ninths of his money. How much did he have left?

6. A farmer sold the potatoes from 6 acres at 65 cents a bushel for $331.50. Find the average yield.

7. If a merchant buys gloves at $21 a dozen pair, at what price per pair must he sell them to gain 20%?

LESSON 127

1. $43.47 is 4.6% of what? $83.20 is $8\frac{2}{3}\%$ of what?

2. Find the capacity in barrels of a cistern that is 12 ft. square and 5 ft. deep.

3. How many square yards are there in a triangle whose base is 48 ft. and altitude 36 ft.?

4. How many oblongs 9 in. by 4 in. can be cut from a piece of paper 9 yd. long and 3 ft. wide?

5. If it requires 255 sq. ft. of zinc to line a tank 8 ft. long and 6 ft. 6 in. wide, how deep is it?

6. How many yards of carpet 1 yard wide will be required for a room 28 ft. 6 in. by 22 ft. 3 in., if the strips run lengthwise and there is a waste of 1 ft. on each strip except the first in matching? How many yards will be required, if the strips run across the room?

1. A man sold $16\frac{2}{3}\%$ of a flock of 90 sheep. How many did he have left?

2. Find 10% of $945. 20% of $525. 25% of 960 yd.

3. How many posts set 8 feet apart will be required for a fence 32 rods long?

4. $39 is 4% of $57 is 6% of $60 is 8% of

5. At 75 cents a bushel, what will a man receive for 2 tons 800 pounds of barley?

6. $8\frac{1}{3} + 7\frac{1}{4}$. $8\frac{1}{3} + 9\frac{1}{5}$. $9\frac{1}{3} - 4\frac{1}{8}$. $15\frac{1}{4} - 6\frac{1}{5}$.

7. How many acres are there in a triangle whose base is 40 rd. and altitude 36 rd.?

8. $\overline{60 \times 35} \div 25$. $(130 \times 45) \div 39$. $\overline{84 \times 25} \div 175$.

9. If a family use 3 quarts of milk a day, in how many days will they use 45 gallons?

10. At $320 an acre, what is the value of a piece of land 8 rods long and 7 rods wide?

11. How many 3-inch cubes are there in a piece of timber 5 feet long and 1 foot square?

12. About how many gallons will a cistern hold that is 15 ft. long, 8 ft. wide, and 5 ft. deep?

13. How many board feet are there in 30 pieces of lumber 15 ft. long, 6 in. wide, and 4 in. thick?

14. At $3.75 a cord, what is the value of a pile of wood 96 feet long and 8 feet square at the ends?

15. What per cent profit is there on potatoes bought at 80 cents a bushel and sold at 30 cents a peck?

16. How many square inches will be cut off in a strip 3 inches wide all around a square yard of paper?

17. A grocer bought tea at 45 cents a pound and sold it at 60 cents, gaining $9. How many pounds did he buy?

LESSON 128

1. Find the capacity in bushels of a cubical bin that is 15 feet deep.

2. At 65 cents a square yard, find the cost of cementing a cubical cistern 13 ft. deep.

3. How many half-inch cubes can be cut from a half-inch board 8 ft. long and 10 in. wide?

4. At five cents a foot, how much will it cost to enclose a square field 26 rd. on each side?

5. How many square yards are there in the walls and ceiling of a room 34 ft. by 26 ft. by 12 ft.?

6. A dealer bought cheese at 8 and 3 fourths cents a pound, paying $1470 for it. How much did he buy?

7. A man paid $386.65 on a debt, which is equal to .44 of what he still owed. Find the amount of the debt.

LESSON 129

1. $355 is 14.2% of what? $834 is $46\frac{1}{3}$% of what?

2. A boy spent $2.10, which was 24% of his money. How much did he have left?

3. A man sold a farm for $7680 and lost 1 fifth as much as it cost. Find his loss.

4. A rectangular field 31.25 rods wide contains 6 and 1 fourth acres. How long is it?

5. How many gallons will a cistern hold that is 14 ft. 6 in. long, 7 ft. wide, and 5 ft. deep?

6. If a merchant buys hats at $27 a dozen, how must he mark each hat to be sold at a profit of $33\frac{1}{3}$%?

7. A cellar wall is $28' \times 22' \times 6'$ outside measure. If it is 15 in. thick, how many cubic feet of masonry, actual measure and masons' measure, does it contain?

1. If a man earns $1.75 a day, how many days must he work to earn $140?

2. Find 2% of $830. 4% of $875. 5% of 2400 bu.

3. How many board feet are there in 10 planks 18 feet long and 8 by 2 inches?

4. $4.50 is 10% of $18 is 5% of $7.15 is 25% of

5. At $3.75 a cord, what is the value of a cubical pile of wood 16 feet high?

6. $18\frac{3}{5} \div 3$. $28\frac{1}{3} \div 4$. $32\frac{4}{7} \div 4$. $24\frac{1}{2} \div 4$.

7. A miller sold 48 barrels of flour at $3.75 a barrel. What did he receive for it?

8. At $12 a ton, what will 9500 pounds of hay cost?

9. A rectangular field 18 chains wide contains 37.8 acres. How long is the field?

10. How many tiles 5 inches square will pave a corridor 25 feet long and 5 feet wide?

11. A dealer sold fruit for 75% of the cost and lost $55. How much did he receive for it?

12. How many square yards are there in a triangle whose base is 54 ft. and altitude 24 ft.?

13. A merchant bought silk at $1.60 a yard. At what price per yard must he sell it to gain $12\frac{1}{2}$%?

14. What per cent profit is made on gloves bought at $9.60 a dozen and sold at one dollar a pair?

15. A lady bought 6 lb. of tea at 50 cents a pound and 4 lb. at 80 cents a pound. Find the average price.

16. A man sold the wheat from 10 acres at 80 cents a bushel, receiving $200 for it. Find the average yield.

17. A man bought a carriage for $150, which was equal to $33\frac{1}{3}$% of the cost of his horse. What did both cost?

LESSON 130

1. Find the time from July 18, 1890, to March 8, 1894.

2. At $ 27.50 a thousand, how many feet of lumber can be bought for $ 265.10 ?

3. At 85 cents a hundred, what is the value of 45 bales of hay averaging 225 pounds ?

4. Find the capacity in bushels of a bin 14 ft. 6 in. long, 8 ft. wide, and 6 ft. 6 in. deep.

5. At $ 26 per M, what is the value of 84 planks 14 ft. long, 8 in. wide, and 1½ in. thick ?

6. A rectangular field 40 rods long has a perimeter of 136 rods. How many acres does it contain ?

7. A man sold 630 bushels of barley and had 16% of his crop left. How many bushels did he have left ?

LESSON 131

1. $ 600 is 4.8% of what ? $ 500 is 20⅚% of what ?

2. How many gallons will a cubical cistern hold that is 6 feet 6 inches deep ?

3. At $ 3.20 a cord, what is the value of a pile of cordwood 86 feet long and 6 feet high ?

4. If a merchant receives $ 1.75 for .625 of a yard of lace, what is the value of 8.875 yards ?

5. Add 24 rd. 5 yd. 2 ft. 8 in., 16 rd. 4 yd. 1 ft. 10 in., 86 rd. 3 yd. 2 ft., and 5 yd. 1 ft. 8 in.

6. A room is 16 ft. square, and the walls and ceiling contain 864 sq. ft. Find the height of the room.

7. If a man should sell a piece of land at $ 45 an acre, he would gain $ 2240 ; but if he should sell it at $ 35 an acre, he would lose $ 960. Find the cost of the land.

1. At $1.25 a barrel, how much will a man receive for 88 barrels of apples?

2. Find 1% of $5480. $\frac{1}{2}$% of $750. $\frac{1}{8}$% of $3224.

3. Find the number of board feet in 20 scantlings 24 feet long and 4 by 2 inches.

4. $.25 × 25. $.25 × 35. $.25 × 45. $.25 × 66.

5. How many square yards are there in the walls of a room 16 ft. by 14 ft. by 9 ft.?

6. $25 \times 7 + 75$. $58 \times 6 + 58 \times 4$. $97 \times 11 - 97$.

7. At $160 an acre, what is the value of a piece of land 20 rods long and 15 rods wide?

8. At 25 cents for 16 eggs, how many dozen cost $6?

9. How many board feet are there in 8 pieces of timber 10 feet long and 1 foot square?

10. A boy bought a coat for $8, which was 62$\frac{1}{2}$% of his money. How much money did he have left?

11. A man bought land for $600. What will he receive for it, if he sells it at a profit of 15%?

12. Find the capacity of tanks: 44 in. by 30 in. by 21 in. 42″ by 33″ by 15″. 55″ × 35″ × 21″.

13. At the rate of 10 cents for 1 sixth of a pie, for how many pies will a woman receive $4.50?

14. If a grocer sells .125 of a barrel of flour for 70 cents, what will he receive for 10 barrels?

15. A boy bought 6 dozen oranges at $.30 a dozen and sold them at 8 for 25 cents. Find the gain.

16. A man sold land for $5600 and gained 2 fifths as much as he paid for it. How much did he gain?

17. A grocer bought 80 bushels of potatoes at 80¢ a bushel and sold them at 30¢ a peck. Find the gain.

LESSON 132

1. Find the exact number of days from May 23 to November 19 of the same year.

2. How many bushels of wheat will a bin hold that is 14 ft. square and 7 ft. deep?

3. How many oblongs 8 in. by 5 in. are there in a sheet of paper 12 yd. long and 5 ft. wide?

4. A man gained $518 on 148 acres of land, which he sold at $9.75 an acre. Find the cost per acre.

5. A merchant received $15 for 3 eighths of a piece of ribbon at $1.25 a yard. How many yards were left?

6. A farmer sold 117 bushels of potatoes, which was equal to .45 of the number of bushels he had left. Find the value of his whole crop at 55 cents a bushel.

LESSON 133

1. Find the greatest common factor of 839 and 2768.

2. How many cubes $2\frac{1}{2}$ inches long are there in a cube of wood $2\frac{1}{2}$ feet long?

3. A piece of ground containing 3 fourths of an acre is 363 feet long. How wide is it?

4. Find the capacity in gallons of a cistern that is 6 ft. 6 in. square and 5 ft. deep.

5. A man sold a piece of land for $4600 and lost 1 ninth as much as it cost. What was the cost?

6. A man sold the wheat from 60 acres at 84 cents a bushel for $1134. Find the average yield per acre.

7. If a man should sell sheep at $7.50 a head, he would gain $150; but if he should sell them at $6.50 a head, he would lose $100. How much did he pay for them?

1. Find the number of board feet in 40 joists 25 feet long and 12 by 3 in.

2. Find $12\frac{1}{2}\%$ of $6400. $16\frac{2}{3}\%$ of $690. $33\frac{1}{3}\%$ of 3675.

3. If 1 bushel 3 pecks of chestnuts cost $4.20, what is the price per bushel?

4. At $10 a ton, what will 2900 pounds of hay cost?

5. At $4 a cord, what is the value of a pile of cordwood 56 feet long and 6 feet high?

6. $\frac{1}{2}$ of $50 is 20% of $\frac{1}{4}$ of $60 is $33\frac{1}{3}\%$ of

7. If a railway train runs a mile in 1 minute 30 seconds, what is the rate per hour?

8. $42\frac{3}{8} \div 3$. $36\frac{1}{3} \div 4$. $35\frac{5}{7} \div 5$. $48\frac{1}{4} \div 4$.

9. How many board feet are there in 50 pieces of timber 15 feet long and 8 inches square?

10. A boy paid 20% of his money for a ball. How many more could he buy at double the price?

11. How many tiles 6 inches square will be required to pave a hall 30 ft. long and 8 ft. wide?

12. A merchant sold $49\frac{1}{2}$ yards of silk in equal parts to four ladies. How many yards did each buy?

13. What per cent profit is there on tea bought at 45 cents a pound and sold at 60 cents a pound?

14. How many quarts of berries, at 12 cents a quart, will pay for 8 pounds of tea at 75 cents a pound?

15. A man sold 8 ninths of his potatoes at 50 cents a bushel for $360. How many bushels did he keep?

16. How many rods of fence will enclose a square quarter-section and divide it into 4 equal squares?

17. A man sold the potatoes from 8 acres at 50 cents a bushel for $300. What was the average yield?

LESSON 134

1. Find the time from Aug. 24, 1872, to Feb. 16, 1892.

2. A man spent .62 of his salary and had $475 left. How much did he spend?

3. A room is 28 ft. by 18 ft., and the walls contain 1058 sq. ft. How high is the room?

4. How many acres are there in a rectangular field 14 ch. 75 l. long and 9 ch. 48 l. wide?

5. Find the capacity in gallons of a cistern that is 15 ft. long, 8 ft. wide, and 6 ft. deep.

6. A shed 14 ft. square and 12 ft. high is filled with wood. Find the value of it at $3.50 a cord.

7. A man bought 4 loads of coal averaging 2275 pounds at $5.50 a ton. How much did he pay for it?

LESSON 135

1. $7\frac{1}{2} \times 3\frac{2}{3} + 8\frac{3}{4} \div 2\frac{5}{8}$. 2. $7\frac{1}{3} \times 5\frac{3}{4} - 55 \div 3\frac{3}{4}$.

3. If $.8\frac{3}{4}$ of a yard of plush is worth $5.95, how many yards can be bought for $49.30?

4. How many bushels of oats can a man put into a cubical bin that is 11 feet deep?

5. How much fertilizer will be required for 9 A. 112 sq. rd., allowing 2 bu. 3 pk. to an acre?

6. At 75 cents a square yard, it cost $99 to pave a walk. If the walk is 6 feet wide, how long is it?

7. How many yards of carpet 27 in. wide will be required for a room 25 ft. 9 in. by 20 ft. 6 in., if the strips run lengthwise and there is a waste of 10 in. on each strip except the first in matching? How many yards will be required, if the strips run across the room?

1. A man bought a quarter-section of land at $6.25 an acre. Find the cost.

2. Find 2% of $2450. 6% of $975. 8% of 2500 men.

3. Find the number of board feet in 30 scantlings 16 feet long and 4 by 3 in.

4. $3.75 × 56. $6.25 × 64. $8.75 × 96.

5. How many acres are there in a triangle whose base is 48 rd. and altitude 40 rd.?

6. $38 is 4% of $44 is 5% of $45 is 6% of

7. If a pile of cord-wood is 4 feet high, how long must it be to contain 12½ cords?

8. $\overline{70 \times 63} \div 49$. $(175 \times 55) \div 77$. $\overline{48 \times 30} \div 160$.

9. A boy sold chestnuts at 10 cents a quart for $9.60. How many bushels did he sell?

10. At $80 an acre, what is the value of a piece of land 11 rods long and 9 rods wide?

11. If a grocer buys tea at 60 cents a pound, at what price must he sell it to gain 25%?

12. What per cent profit is there on hats bought at $30 a dozen and sold at $3 apiece?

13. How many board feet are there in 10 joists 18 feet long, 9 inches wide, and 2 inches thick?

14. A speculator sold a piece of land for 85% of the cost and lost $450. What did he receive for it?

15. How many half-inch cubes can be put into a box 8 inches long, 5 inches wide, and 3 inches deep?

16. If a man can do 1 eighth of some work in half a day, in how many days can he do the whole of it?

17. A field is 75 rd. by 50 rd. How many rods of fence will enclose and divide it into 6 equal squares?

LESSON 136

1. Find 9.4% of $950. .8% of $9500. 30⅔% of $570.

2. If the capacity of a bin is 14 cubic yards, how many bushels will it hold?

3. At $13 a ton, what is the value of 9 loads of hay, if the average weight is 2140 pounds?

4. How many square yards are there in the walls and ceiling of a room 36 ft. by 28 ft. by 12 ft.?

5. A park 96 rd. by 84 rd. has a walk 10 ft. wide around it. Find the area of the walk in square feet.

6. A man bought a section of land at $5.50 an acre and sold it at a profit of 35%. What did he get for it?

7. At $18 per M, find the cost of lumber for a floor 21 ft. by 16 ft., allowing ⅛ of the lumber for matching.

LESSON 137

1. $37.20 is 4.8% of what? $102 is .8% of what?

2. Find the capacity in gallons of a cubical cistern that is 8 feet 6 inches deep.

3. If 22.5 yd. of ribbon cost $6.75, at what price per yard must it be sold to gain 20%?

4. How many feet of 6-inch boards will be required to build a fence 30 rods long and 4 boards high?

5. A dealer paid $600 for apples at $1.25 a barrel and sold them at $1.85 a barrel. Find the profit.

6. A man spent ⅓ of his money for a horse, ⅖ of it for a carriage, and had $224 left. Find the cost of both.

7. A cellar wall is $36' \times 28' \times 8'$ inside measure. If it is 2 ft. thick, how many cubic feet of masonry, actual measure and masons' measure, does it contain?

1. About how many gallons will a cubical cistern hold that is 10 feet deep?

2. Find 1% of $438. $\frac{1}{2}$% of $6800. $\frac{1}{4}$% of $2440.

3. Find the number of board feet in 20 beams 15 feet long and 6 inches square.

4. $45\frac{3}{7} \div 3$. $25\frac{1}{2} \div 3$. $64\frac{4}{5} \div 4$. $56\frac{1}{4} \div 5$.

5. A miller sold 560 barrels of flour at $3.75 a barrel. How much did he receive for it?

6. $46 is 5% of $33 is 6% of $68 is 8% of

7. At $50 an acre, what is the value of a square of land whose perimeter is 128 rods?

8. At $10 a ton, what will 1360 pounds of hay cost?

9. How many square yards are there in a triangle whose base is 36 ft. and altitude 25 ft.?

10. How many posts will be required for a fence 24 rods long, if the posts are set 6 feet apart?

11. How many board feet are there in 30 joists 18 feet long, 10 inches wide, and 3 inches thick?

12. If each of 6 horses eats 12 quarts of oats a day, how many days will 144 bushels last them?

13. Find the capacity of tanks: 44 in. by 35 in. by 27 in. 39″ by 36″ by 35″. 42″ × 33″ × 22″.

14. What per cent profit is there on silk bought at $1.50 a yard and sold at two dollars a yard?

15. A dealer paid $960 for flour at $4 a barrel and sold it at $4.75 a barrel. Find the profit.

16. How many tiles 8 in. by 6 in. will be required to pave a corridor 40 feet long and 8 feet wide?

17. A room is 10 ft. square. If the walls, floor, and ceiling contain 520 sq. ft., what is the height?

LESSON 138

1. A cistern 8 feet square has 120 barrels of water in it. How deep is the water?

2. If a man receives $2.20 for .8 of a day's work, how many days must he work to earn $88?

3. At $28 per M, what is the value of 36 pieces of lumber 24 feet long and 6 inches square?

4. A man sold a carriage for $252, which was 28% less than he paid for it. Find the cost and loss.

5. How many tiles 4 in. square will pave a strip 2 ft. wide around a hall 48 ft. long and 36 ft. wide?

6. If it requires 132 sq. ft. of zinc to line a tank 6 ft. long and 4 ft. 6 in. wide, how deep is it?

7. A garden is 24 rd. by 16 rd. A strip 2 rd. wide on all sides will add how many square rods to the garden?

LESSON 139

1. A man discharged 48% of a debt by paying $456. Find the amount that he still owed.

2. At $175 an acre, a rectangular piece of land 8 chains wide cost $1190. How long was it?

3. A merchant sold 3 fifths of a piece of silk at $1.75 a yard for $47.25. How many yards were left?

4. A grocer paid $799 for flour at $4.25 a barrel and sold it at $4.85 a barrel. Find the profit.

5. Find the capacity in barrels of a cistern 15 ft. 3 in. long, 8 ft. 4 in. wide, and 5 ft. 6 in. deep.

6. At $450 an acre, what is the value of a rectangular piece of land 8 ch. 60 l. long and 5 ch. 30 l. wide?

7. How many square inches will be cut off in a strip 2 in. wide all around a sheet of paper 15 yd. by 4 ft.?

1. At $320 an acre, what is the value of a piece of land 9 rods square?

2. How many board feet are there in 15 beams 20 feet long and 6 by 5 inches?

3. A rectangular field 35 chains long contains 77 acres. How wide is the field?

4. A man sold 56% of 100 sheep at $3.75 a head. How much did he receive for them?

5. How many acres are there in a triangle whose base is 56 rd. and altitude 40 rd.?

6. About how many bushels will a bin hold that is 15 ft. long, 8 ft. wide, and 5 ft. deep?

7. If a merchant buys silk at $1.80 a yard, at what price must he sell it to gain 16$\frac{2}{3}$%?

8. A farmer sold 68 barrels of apples at $1.25 a barrel. How much did he receive for them?

9. Two men hire a pasture for $25. A puts in 8 horses and B 12. How much should each pay?

10. Find the number of board feet in 10 pieces of lumber 30 feet long and 12 inches square.

11. A speculator sold wool for 96% of the cost and lost $200. How much did he receive for it?

12. If a man receives $1.50 for .4 of a day's work, how much will he earn, if he works 48 days?

13. At $3.85 a cord, what is the value of 4 piles of cord-wood, each 200 feet long and 4 feet high?

14. At 37$\frac{1}{2}$ cents a rod, how much will it cost to build a fence on both sides of a road one mile long?

15. How many square inches will be cut off in a strip 5 inches wide all around a sheet of paper 110″ by 60″?

LESSON 140

1. How many barrels of water will a cistern hold that is 14 feet square and 7 feet deep?

2. A room is 15 ft. square, and the walls and ceiling contain 795 sq. ft. Find the height of the room.

3. A boy bought peaches, paying 2 cents for 4, and sold them at the rate of 3 for five cents, thereby gaining $2.17. How many peaches did he buy?

4. An enclosing wall is 85′ × 46′ × 9′ inside measure. If it is 18 in. thick, how many cubic feet of masonry, actual measure and masons' measure, does it contain?

5. If a merchant should sell a piece of silk at $2.85 a yard, he would gain $48.40; but if he should sell it at $2.35 a yard, he would gain only $26.40. How much would he receive for it at the less price?

6. At $28 per C for the posts and $24 per M for the boards, what will it cost to build a fence four boards high around a rectangular field 64 rd. by 32 rd., setting the posts 8 feet apart and using boards 10 in. wide?

7. How many yards of carpet 1 yd. wide will be required for a room 17 ft. 4 in. by 14 ft. 10 in., if the strips run lengthwise and there is a waste of 6 in. on each strip except the first in matching? How many yards will be required, if the strips run across the room?

8. A man built a tight board fence 32 rd. long and 6 ft. high. The boards were in an upright position and were nailed to two scantlings 4 by 2 in., and the posts were set 8 feet apart. If he paid $38 per C for the posts, $14 per M for the scantlings, and $18 per M for the boards, what did the material for the fence cost?

ANSWERS

COMPLETE GRADED ARITHMETIC

SIXTH GRADE

Page 404.

1. $\frac{9}{50}$; $\frac{17}{40}$; $\frac{1}{40}$; $\frac{1}{80}$.
2. $\frac{13}{50}$; $\frac{69}{200}$; $\frac{9}{125}$; $\frac{3}{400}$.
3. $\frac{17}{20}$; $\frac{7}{40}$; $\frac{1}{125}$; $\frac{1}{16}$.

Page 405.

1. .1875; .475; .0306$\frac{2}{3}$; .00225.
2. .175; .22$\frac{2}{3}$; .00675; .079375.
3. .257$\frac{1}{7}$; .216$\frac{2}{3}$; .351 +; .0536.

Page 406.

1. $\frac{11}{25}$; $\frac{163}{200}$; $\frac{3}{40}$; $\frac{3}{80}$.
2. $\frac{27}{50}$; $\frac{23}{40}$; $\frac{6}{125}$; $\frac{1}{400}$.
3. 14.64.
4. 32.8.
5. 4.625.
6. 54.48.
7. 86.85.
8. 36.954.
9. 634.75.
10. 34.335.
11. 60.1124.
12. 45.67.
13. .78.
14. 87.775.
15. 1280.91.
16. 980.95.
17. 811.97.
18. 899.04.
19. 665.72.

1. $\frac{13}{20}$; $\frac{29}{40}$; $\frac{21}{250}$; $\frac{4}{625}$.
2. $\frac{22}{25}$; $\frac{39}{40}$; $\frac{12}{125}$; $\frac{7}{80}$.
3. 8.547.
4. 5.55.
5. 56.125.
6. 37.516.
7. 45.02.
8. 22.45.
9. 4.684.
10. 5.575.
11. 64.175.
12. 72.84.
13. 35.765.
14. 8.6295.
15. 552.13.
16. 897.865.
17. 1358.725.
18. 1040.115.
19. 498.744.

Page 408.

1. 4.705.
2. 16.85.
3. 5.475.
4. 29.42.
5. 33.52.
6. 17.325.
7. 28.375.
8. 46.75.
9. 15.065.
10. .28; .43$\frac{1}{3}$; .14; .0023$\frac{1}{3}$.
11. .3; .457$\frac{1}{7}$; .492; .0228.
12. 614.403.
13. 768.365.
14. 637.48.
15. 44 bu.
16. $.79.

1. 3.165.
2. 25.85.
3. 25.615.
4. 33.55.
5. 53.56.
6. 35.455.
7. 51.795.
8. 79.625.
9. 49.574.
10. .208$\frac{1}{3}$, .74, .038 +; .0264.
11. .106$\frac{2}{3}$; .76; .968; .0642.
12. 733.71.
13. 949.625.
14. 429.847.
15. $2480.
16. $1593.75.

Page 410.

1. 1844.7.
2. 255.1275.
3. 9050.
4. 61.335.
5. 1192.672.
6. 115,000.
7. 3279.9.
8. 203.609.
9. 2,500,000.
10. .7.
11. .00033.
12. 2254.5.
13. .037.
14. 150.3.
15. 153,162.
16. 6375.86644.
17. 56674.7835.
18. 512.121.
19. $259; $31.50 351 men.
20. 204 qt.
21. $3150.

1. 641.448.
2. 303.51.
3. 14,994.85.
4. 221.19.
5. .3025.
6. 70,866.
7. 3.151.
8. 1074.2.
9. 2,022,160.
10. .07.
11. 4.116.
12. 60.18.
13. 7678.15125.
14. 1530.45875.
15. .42$\frac{2}{9}$; .952 +; .17 +; .0178.
16. 1044.876.

17. 774.527.
18. 243.
19. $654.50.

Page 412.

1. 1734.6.
2. $53.20.
3. 9.96.
4. 287.55.
5. $67.50.
6. 3097.6.
7. 18.27.
8. $192.50.
9. 93,957.3.
10. .00305.
11. 42.
12. $50.22; 24.8; $137.70.
13. 84 bu.
14. $44.
15. $204.
1. 1239.3.
2. $48.45.
3. .82.
4. 168.3.
5. $132.27.
6. 4576.2.
7. 45.612.
8. $258.30.
9. 97,722.
10. .009155.
11. 1865.
12. $17.37; $49.60; 100 men.
13. $7140.
14. 7920.
15. $312.

Page 414.

1. 250.
2. .86.
3. .01.
4. 9225.
5. $291\frac{1}{3}$.
6. 100.
7. 16,000.
8. 1700.
9. 5,000,000.
10. 500.
11. 1304.
12. .0016.
13. 13.9.
14. 6.
15. 2,276,470.58.
16. .02415.
17. 332.688.
18. $45.50; 98.55; $46.50.
19. $832\frac{1}{2}$.
20. $40.80.
1. 310.
2. 4100.
3. 13,000.4.
4. 4500.
5. 20.5.
6. $746\frac{2}{3}$.
7. .07.
8. 14,325.
9. 4800.48.
10. $.257\frac{1}{7}$; $.127\frac{3}{11}$; .232; .348.
11. 401.654.
12. $91; 56 sq. rd.; $5.79.
13. $5400.
14. 199.
15. $1056.

Page 416.

1. 4360.
2. 7812.5.
3. $198.25.
4. 2750.
5. 2750.
6. $209.76.
7. 8.0641.
8. 14,826.08.
9. $389.55.
10. 1544.
11. $73.69.
12. $176.25, $7; 48 rd.
13. 457.26.
14. $6300.
15. 28 rd.
16. $850.
1. 78.
2. 75,000.
3. $724\frac{4}{5}$.
4. 4.65.
5. 9800.
6. 4100.
7. .17692.
8. $242.20; 42; $95.16.
9. 1293.875.
10. .00068.
11. 830.
12. $43.40.
13. $121.13.

Page 418.

1. $59.10; $88.65; $66.49.
2. $46.38; $61.84; $56.04.
3. $78.57; $68.75; $73.11.
4. $16.19; $18.88; $21.58; $15.65.
5. 2214 lb.
6. $101.93.
7. 740.
1. $47.63; $53.02; $61.28.
2. 8965.
3. $177.84; $230.01; $253.72.
4. $52.69; $67.15; $76.45.
5. $31.96.
6. $42.22.
7. $34.69.

Page 420.

1. 2, 2, 2.
2. $57; $7.72; $51.30; $34.16; $61.76.
3. $179.16; $138.10; $209.02.
4. $37.24; $45.51; $35.17; $53.79.
5. $71.
6. $9300.
7. 50.
1. 192.
2. 2835.
3. $7; $864; $391; $63.72; $630.
4. 2200 lb.
5. 73.
6. 9475.
7. $221.
8. 680.

Page 422.

1. 4500.
2. $25\frac{11}{12}$.
3. 4200.
4. 7200.
5. $20\frac{1}{20}$.
6. 2400.
7. 3, 19.
8. $248.85.
9. 1300 lb., $8; 3172.
10. $62.
11. $53.82; $62.38; $70.94.
12. 238.
13. $75.
1. 1600.
2. $9\frac{5}{8}$.
3. 2400.
4. 2700.
5. $9\frac{1}{18}$.
6. 5600.
7. 1.
8. $118.72; $51; $64.20.
9. 1700.
10. $7875.
11. $600.

12. .04817568.
13.. $696 15.

Page 424.

1. $21\frac{11}{12}$.
2. $3\frac{5}{6}$.
3. $12\frac{11}{24}$.
4. $16\frac{1}{20}$.
5. $3\frac{7}{12}$.
6. $9\frac{11}{20}$.
7. 9225 ft.
8. $636.65.
9. 100.
10. $29.40.
11. 88.
12. 533 ; $149 ; 486 ; $240 ; $29.20 ; $9.48.
1. $21\frac{1}{4}$.
2. $4\frac{11}{15}$.
3. $10\frac{11}{40}$.
4. $23\frac{1}{12}$.
5. $4\frac{10}{21}$.
6. $11\frac{19}{24}$.
7. 2^5, 23 ; 3^4, 11 ; 2^5, 73.
8. 3750 lb.
9. $552 ; $487.50 ; $39.48.
10. $103.05 ; $127.10 ; $130.53.
11. $234.74.
12. $347.
13. $416.

Page 426.

1. 2033.6.
2. 1800.
3. 2400.
4. 2701.
5. 12,600.
6. 5760.
7. 760 ; $3875.
8. 19,824.
9. 8675.
10. 15,250.
11. 840.
12. $2325.
1. $25\frac{1}{40}$.
2. $2\frac{3}{8}$.
3. $9\frac{19}{30}$.
4. $25\frac{11}{12}$.
5. $2\frac{10}{21}$.
6. $8\frac{13}{18}$.
7. 42.
8. $29.98.
9. $27.19.
10. 67.
11. $8\frac{3}{4}$.
12. $30.75.

Page 428.

1. $24\frac{23}{60}$.
2. 7500.
3. $10\frac{13}{24}$.
4. $24\frac{19}{24}$.
5. 8400.
6. $2\frac{23}{24}$.
7. None.
8. $2.95.
9. $27.88 ; 108.70⅔ ; $316.75.
10. 18.
11. $540.
12. $197.60.
13. $6.55.
1. $26\frac{1}{20}$.
2. $2576.
3. $2\frac{13}{30}$.
4. $23\frac{2}{15}$.
5. $3185.
6. $1\frac{5}{18}$.
7. .02285.
8. 1.
9. $16.53.
10. $186.75 ; $427.25.
11. 306.
12. $57.
13. $135.
14. $44.40.

Page 430.

1. $20\frac{7}{8}$.
2. $3\frac{16}{21}$.
3. $1\frac{17}{24}$.
4. $21\frac{29}{30}$.
5. $4\frac{11}{18}$.
6. $1\frac{25}{28}$.
7. $40.50 ; $.70 ; 4.86.
8. $154.
9. $143.91 ; $211.63 ; $237.02.
10. $10.50.
11. $.95.
12. 80.
1. $17.
2. $118.19.
3. $750.75.
4. 192.
5. $600.
6. $192.50.
7. $35.75.

Page 432.

1. $21\frac{13}{18}$.
2. $41\frac{13}{21}$.
3. $6\frac{5}{8}$.
4. $22\frac{3}{28}$.
5. $10\frac{11}{12}$.
6. $3\frac{1}{30}$.
7. 8750.
8. $5400.
9. 2592.
10. 304.
11. $387.
12. $2.20.
1. 18,600 lb.
2. 1 mi. ; 1 ton.
3. $153.86.
4. 1360.
5. 1728.
6. $171.
7. $41.44.
8. $55.25.

Page 434.

1. $22\frac{11}{24}$.
2. 7800.
3. $2\frac{1}{30}$.
4. $27\frac{11}{18}$.
5. 4500.
6. $28\frac{7}{12}$.
7. 16,650 lb.
8. 4.9.
9. $69.60 ; $78.88 ; $85.84.
10. $136.
11. $21.
12. 15.
1. $79\frac{11}{12}$.
2. $6693\frac{3}{4}$.
3. $36\frac{11}{30}$.
4. 450.
5. $15{,}178\frac{1}{5}$.
6. $2\frac{11}{12}$.
7. .01527.
8. $163.61.
9. 226,785.
10. 4608.
11. $4410.
12. $24.
13. $1.65.

Page 436.

1. $2\frac{2}{5}$.
2. $7\frac{1}{12}$.
3. $1\frac{1}{4}$.
4. $2\frac{2}{7}$.
5. $11\frac{37}{40}$.
6. 4.
7. $410 ; $230.23 ; 371.
8. $227.50.
9. 43,888.
10. 153.
11. $95.
12. 15,552.
1. $13\frac{7}{12}$.
2. $2\frac{1}{2}$.
3. $7\frac{11}{14}$.
4. $38\frac{19}{28}$.
5. $1\frac{9}{10}$.
6. $5\frac{19}{20}$.
7. 21,143.
8. 732 ; 1000 ; $55.20.
9. 958.
10. $629.
11. $172.80.
12. 240.

Page 438.

1. 1860.
2. $4\frac{23}{35}$.
3. $8\frac{3}{4}$.
4. $1650\frac{6}{7}$.
5. $2\frac{2}{3}$.
6. $5\frac{1}{3}$.
7. .01317.
8. None.
9. $170.43.
10. $4800.
11. $155.
12. 146.30.
13. 40.
1. $13{,}753\frac{3}{5}$.
2. 7.
3. $1414\frac{1}{2}$.
4. 45,189.
5. $17\frac{17}{18}$.
6. $3065\frac{5}{8}$.
7. $209.76;
   $283;
   $51.59.
8. 1728.
9. $1.94.
10. $210.80.
11. $4.
12. 858.

Page 440.

1. $2522\frac{8}{11}$.
2. $10\frac{1}{2}$.
3. $2749\frac{1}{7}$.
4. $1528\frac{11}{63}$.
5. $8\frac{1}{6}$.
6. $5170\frac{5}{6}$.
7. $83.96;
   $94.44;
   $72.38.
8. 351.
9. $65.69.
10. 143.
11. 5.4.
12. $2.20.
1. 750.
2. $8\frac{3}{4}$.
3. $2398\frac{1}{2}$.
4. 960.
5. $2\frac{3}{4}$.
6. $4914\frac{2}{3}$.
7. 12,250.
8. $60.48;
   $91.15;
   $167.74.
9. 672.
10. $52.50.
11. 129.
12. $4.50.
13. $3.25.

Page 442.

1. $26\frac{11}{15}$.
2. $160\frac{1}{2}$.
3. $21\frac{5}{8}$.
4. $23\frac{11}{12}$.
5. $298\frac{2}{3}$.
6. $1\frac{1}{2}$.
7. 9722.
8. 8.1.
9. $591.75.
10. $25.90.
11. 1875.
12. $226.80.
1. $8\frac{2}{3}$.
2. $320\frac{1}{4}$.
3. $5\frac{7}{8}$.
4. $10\frac{5}{12}$.
5. $587\frac{4}{7}$.
6. $13\frac{1}{12}$.
7. $4550.
8. $217.
9. $33.60.
10. $151.01.
11. 12,800.
12. 120.

Page 444.

1. $\frac{8}{15}$.
2. $537\frac{1}{3}$.
3. $19\frac{3}{8}$.
4. 2^3, 3^2; 2^3, 5,
   7; 3^2, 7, 11;
   5^3, 13.
5. $56.70;
   $75.40;
   84.42.
6. $147.
7. 133.
8. $9\frac{3}{5}$.
9. 306.
10. $3.50.
1. $2\frac{2}{3}$.
2. $742\frac{1}{2}$.
3. $12\frac{7}{12}$.
4. 5^3; 2, 3, 5, 7;
   3^2, 5, 7;
   2^4, 3^2, 13.
5. $89.30,
   $65.10,
   $197.92.
6. $6900;
   $12,800.
7. $16\frac{1}{3}$.
8. $867.84.
9. 372.
10. $637.50.

Page 448.

1. 287 qt.
2. 128,000 in.
3. 79 pt.
4. 23,015 sq. yd.
5. 895 in.
6. 191,643 in.
7. 1628.
8. 386,760 sq. ft.

Page 449.

9. $94\frac{1}{2}$ ft.
10. 255,149 in.
11. 32,166 gr.
12. $33{,}093\frac{1}{2}$ sq. yd.
13. 129 sq. yd.
14. 318,757 in.
15. 55,687 gr.
16. $388{,}413\frac{1}{3}$ sq. ft.
17. 313,641 sq. in.
18. 381,238 in.
19. 3104 gr.
20. $162{,}748\frac{1}{4}$ sq. ft.
21. 319 qt.
22. 64,883 in.
23. 123 gi.
24. $14{,}335\frac{1}{4}$ sq. yd.

Page 450.

1. 266 rd. 3 yd.
   2 ft.
2. 118 rd. 2 yd.
   7.2 in.
3. 274 A.
   45 sq. rd.
   21 sq. yd.
   5 sq. ft.
   $66\frac{4}{7}$ sq. in.
4. 147 A. 32 sq. rd.
5. 228 rd. 3 yd.
   $5\frac{1}{7}$ in.
6. 156 rd. 4 yd.
   1 ft. 2.4 in.
7. 355 A.
   88 sq. rd.
   26 sq. yd.
   8 sq. ft.
8. 211 A. 32 sq. rd.
9. 177 rd. 4 yd.
   10 in.
10. 169 rd. 3 yd.
    10.8 in.
11. 548 A.
    91 sq. rd.
    12 sq. yd.
    8 sq. ft.
    $97\frac{5}{7}$ sq. in.
12. 300 A.
    128 sq. rd.
13. 1865.
14. $13.88.
15. $2592\frac{1}{4}$.
16. $73.80,
    78.12, 2819.
17. 9.
18. 1600.
1. 248 rd. 4 yd.
   2 ft. 8 in.
2. 211 rd. 1 yd.
   3.6 in.
3. 137 sq. rd.
   4 sq. yd.
   2 sq. ft.
   $128\frac{4}{7}$ sq. in.
4. 364 A.
   128 sq. rd.
5. 2 qt. 1 pt.
   $\frac{4}{7}$ gi.
6. 233 rd. 3 yd.
   10.8 in.

7. 133 sq. rd. 10 sq. yd. 108 sq. in.
8. 492 A. 128 sq. rd.
9. 2 qt. $1\frac{7}{9}$ gi.
10. 259 rd. 1 yd. 3.6 in.
11. 124 sq. rd. 13 sq. yd. 4 sq. ft.
12. 569 A. 96 sq. rd.
13. 1725 in.
14. 12800.
15. $42.
16. 144.
17. $3900.

Page 452.

1. 4 mi. 222 rd. 1 yd. 7 in.
2. 3 lb. 2 oz. 5 pwt.
3. 1 A. 51 sq. rd. 4 sq. yd. 108 sq. in.
4. 5 mi. 44 rd. 5 yd. 2 ft. 9 in.
5. 3 lb. 9 oz. 13 pwt.
6. 1 A. 149 sq. rd. 5 sq. yd. 4 sq. ft. 108 sq. in.
7. 15.
8. 2241.
9. 18 sq. yd. 2 sq. ft. 57 sq. in.
10. $525.14.
11. 696 mi.
12. 14,400.
13. $460.
1. 6 mi. 192 rd. 2 yd. 9 in.
2. 2 lb. 4 oz. 7 pwt.
3. 1 A. 22 sq. rd. 14 sq. yd. 8 sq. ft. 72 sq. in.
4. 10 mi. 196 rd. 2 yd. 1 ft. 1 in.
5. 3 lb. 5 oz. 4 pwt.
6. 1 A. 118 sq. rd. 14 sq. yd. 5 sq. ft. 72 sq. in.
7. $8.87.
8. 88 sq. rd. 26 sq. yd. 8 sq. ft.
9. 10 oz. 13 pwt. 14.4 gr.
10. 9440.
11. 1850 lb.
12. $64.40.
13. $10,350.

Page 454.

1. 3 pk. 7.2 qt.
2. 142 A. 35 sq. rd. 16 sq. yd. 7 sq. ft. 36 sq. in.
3. 182 rd. 4 yd. 2 ft. $1\frac{5}{7}$ in.
4. 218,128 cu. in.
5. $32.50; $50.22; $ 5640.
6. 667.7.
7. $256.08.
8. 48.
9. 2400.
1. $10\frac{5}{12}$.
2. $933\frac{3}{4}$.
3. $31\frac{3}{8}$.
4. $8\frac{11}{18}$.
5. $1971\frac{1}{5}$.
6. $7\frac{3}{8}$.
7. $4\frac{13}{14}$.
8. 3050.
9. $6\frac{1}{12}$.
10. 3 mi. 144 rd. 4 yd. 10 in.
11. 101 sq. rd. 9 sq. yd. 5 sq. ft. 108 sq. in.
12. $90.70.
13. 34 rd.
14. $33.75.
15. $256.50.
16. $.90.

Page 456.

1. $24\frac{11}{12}$.
2. $971\frac{1}{3}$.
3. $3\frac{1}{12}$.
4. $35\frac{1}{6}$.
5. $1691\frac{1}{4}$.
6. $1\frac{1}{2}$.
7. 1 A. 153 sq. rd. 7 sq. yd. 7 sq. ft. 108 sq. in.
8. 7 mi. 296 rd. 2 yd. 2 ft. 9 in.
9. 27 gal. 1 pt.
10. 10 mi. 118 rd. 3 yd. 2 ft. 8 in.
11. $25.18.
12. 20 A. 100 sq. rd. 23 sq. yd. 130 sq. in.
1. 4800.
2. 13,800.
3. 8400.
4. 3^2, 7, 19; 5^2, 91.
5. 2800.
6. 457 A. 22 sq. rd. 25 sq. yd. 8 sq. ft. $51\frac{3}{7}$ sq. in.
7. 913.467.
8. 278 rd. 5 yd. 9.15 in.
9. 8 mi. 276 rd. 3 yd. 2 ft.
10. $2480.
11. 15 A. 113 sq. rd. 14 sq. yd. 1 sq. ft. 11 sq. in.

Page 458.

1. 42 mi. 251 rd. 1 yd. 8 in.
2. 49 A. 43 sq. rd. 8 sq. yd.
3. 3 mi. 133 rd. 5 yd. $4\frac{1}{5}$ in.
4. 4 A. 40 sq. rd. 28 sq. yd. 4 sq. ft. 30 sq. in.
5. 1848.
6. 19,890.
7. $32.50.
8. $498.80.
9. 36.
1. 83 mi. 131 rd. 1 yd. 2 ft. 3 in.
2. 4 A. 71 sq. rd. 21 sq. yd. 8 sq. ft. $4\frac{1}{2}$ sq. in.
3. $51.97.
4. 1800 lb.
5. $3.40.
6. $23.65.
7. 1584 ft.
8. $7424.

Page 460.

1. 65 mi. 227 rd. 3 yd. 10 in.
2. 6 A. 55 sq. rd. 10 sq. yd. 3 sq. ft. 36 sq. in.
3. 2933.
4. 307.838.
5. 9250.
6. 10,944.

7. 714.
8. 14.
9. $2150.
1. $4\frac{1}{2}$.
2. $1387\frac{1}{2}$.
3. $2\frac{1}{4}$.
4. 5.
5. $4349\frac{1}{7}$.
6. $7\frac{11}{24}$.
7. 3 mi. 286 rd.
   4 yd. 1 ft.
   $\frac{2}{7}$ in.
8. 18.25 ch.
9. 99 yd.
10. 15 yd.
11. $308.
12. $183.60.

Page 462.

1. $12\frac{29}{36}$.
2. $7468\frac{4}{7}$.
3. $9\frac{5}{12}$.
4. $13\frac{11}{30}$.
5. $14,737\frac{1}{2}$.
6. $5\frac{19}{21}$.
7. $552, $38,
   $173.88.
8. 40 rd.
9. 12 ft.
10. 329,948.
11. 548.
12. $111.80.
1. $13\frac{3}{8}$.
2. $2\frac{4}{7}$.
3. 165.
4. $17\frac{7}{18}$.
5. $2\frac{4}{5}$.
6. $23\frac{5}{24}$.
7. 620.975.
8. 26.25 ch.
9. $760.
10. $131.06.
11. $23.63.
12. 194.

Page 464.

1. $8\frac{19}{30}$.
2. $49\frac{7}{9}$.
3. $\frac{3}{4}$.
4. $48\frac{233}{160}$.
5. $64\frac{5}{12}$.
6. $37\frac{29}{40}$.
7. 98,571 cu. in.
8. $6.17.
9. $1380.
10. $103\frac{1}{3}$.
11. 12,240.
12. 18.26 ch.
1. 83,304 sq. in.
2. 3049.
3. $255.
4. 9 ft.
5. 123.
6. $321.75.
7. $2680.
8. 1584 yd.

Page 466.

1. $2\frac{1}{12}$.
2. $95\frac{11}{12}$.
3. $23\frac{1}{4}$.
4. $2\frac{6}{17}$.
5. $98\frac{5}{12}$.
6. $6\frac{3}{10}$.
7. 388,886 cu. in.
8. 213.7755.
9. 64.
10. $40.25.
11. 14 rd.
12. $285.
1. $875;
   $45.20;
   $201.50.
2. 196,949 sq. in.
3. 17,200 lb.
4. 14,800.
5. 960 rd.
6. $40.80.
7. $618.75.
8. $324.

Page 468.

1. $4\frac{7}{9}$.
2. $48\frac{11}{24}$.
3. $12\frac{7}{12}$.
4. $49.73.
5. 682.42625.
6. $1462\frac{1}{2}$ sq. ft.
7. 18 ft.
8. 1782 sq. ft.
9. $1\frac{2}{5}$ A.
10. 36 ft.
1. $\frac{13}{18}$.
2. $29\frac{4}{15}$.
3. $8\frac{1}{12}$.
4. $52.28.
5. 7^2, 11; 3, 5, 7,
   11; 3^3, 59.
6. $26.50; $15;
   $28.17.
7. 32 rd.
8. 32 in.
9. 226,962.
10. 30 rd.
11. $12.

Page 470.

1. $12\frac{7}{12}$.
2. $3631\frac{1}{4}$.
3. $21\frac{5}{8}$.
4. $24.65.
5. 3,121,560.
6. 4071; 8142.
7. 1764.
8. $117.
9. 13.1 ch.
10. $172.
1. $8\frac{23}{24}$.
2. $10,595\frac{1}{3}$.
3. $\frac{5}{6}$.
4. $2400,
   $940.
5. 231.
6. $86.92.
7. $119\frac{5}{36}$.
8. 24 ft.
9. 7.
10. $457.60.

Page 472.

1. $8\frac{7}{12}$.
2. $1763\frac{3}{4}$.
3. $\frac{3}{4}$.
4. 25 cu. ft.
   1123.2 cu. in.
5. $2900; 2850.
6. 173.93.
7. $270.
8. $4347.
9. 4.728.
10. $49.50.
1. $10\frac{5}{12}$.
2. $2895\frac{1}{3}$.
3. $1\frac{1}{2}$.
4. $192.50;
   $10.20,
   $492.75.
5. $744.
6. 342.
7. $864.
8. 25.
9. 216.
10. $42.

Page 474.

1. $10\frac{3}{4}$.
2. $48\frac{5}{9}$.
3. $1\frac{1}{12}$.
4. 1647.
5. $180.80.
6. 26.
7. 578.
8. $87.12.
9. 16.
10. $147.15.
1. $\frac{1}{2}$.
2. $49\frac{4}{7}$.
3. $34\frac{3}{8}$.
4. $136.29.
5. 172.305.
6. $132.
7. $169.72.
8. 115.
9. 1260.
10. $1330.

Page 476.

1. $12\frac{7}{8}$.
2. $2811\frac{3}{4}$.
3. $3\frac{7}{8}$.
4. $261.17;
   $1920.80;
   $34.50.
5. 4 sq. rd.
   30 sq. yd.
   7 sq. ft.
   91 sq. in.
6. 45.
7. 100.
8. 6 cents.

9. $2448.
10. 1120 ft.
1. $25\frac{1}{6}$.
2. $7099\frac{1}{5}$.
3. $1\frac{11}{12}$.
4. $29.81.
5. 7775.
6. $6438\frac{3}{4}$.
7. 24 rd.
8. $61.50.
9. $2448.
10. 12.5 ch.
11. $259.20.

Page 478.

1. 79.
2. 7250.
3. 3780.
4. $137.10.
5. 900.
6. $39\frac{1}{3}$; $39\frac{2}{3}$.
1. 3, 7, 11.
2. 84.
3. $85\frac{1}{3}$.
4. 306.
5. $35.15.
6. $37\frac{1}{4}$; $36\frac{5}{12}$.

Page 480.

1. $36.72;
   $51.84; $22.
2. 2094.
3. $145; $6800.
4. 76.7375.
5. 1650.
6. $12\frac{1}{2}$.
7. $352.
8. $5.40.
1. 9600.
2. 960.
3. 25,200.
4. $6.60.
5. 2140.
6. $406.
7. $726.75.
8. $51\frac{1}{12}$; 50.

Page 482.

1. $465; $1750.
2. 21.
3. $3.26.
4. $129.85.
5. $79.20.
6. 33.
7. 284.
8. $8400;
   $13,500.
1. $1800;
   $14,400.
2. $142.20;
   $105, $1620.
3. 1536.
4. $786.50.
5. 14,580.
6. 168.
7. 264.
8. $780.75.

Page 484.

1. 2400.
2. 1875.
3. 48,000.
4. $4050,
   $14,700.
5. $6.51;
   $58.63;
   $1053.
6. 231.
7. $16.
8. 199.
9. $42.25.
10. $18.43.
1. $52.50;
   $349.06;
   $5040.
2. $2875;
   $8600.
3. 1.
4. 65.2995.
5. $71.30.
6. $2160.
7. $51\frac{5}{6}$; $52\frac{1}{3}$.

Page 486.

1. 163,824.
2. 3900.
3. 3400.
4. $101.76.
5. $336.
6. 15750.
7. $148.20.
1. $43.20;
   $242.35.
   $620.
2. $750; $4800.
3. 103.987.
4. 1728.
5. $80.08.
6. $9100.
7. $182.39.
8. $141\frac{1}{3}$.

Page 488.

1. $26.22;
   $139.50;
   $1053.
2. 6 A.
   136 sq. rd.
   13 sq. yd.
   6 sq. ft.
3. 1210.
4. 28 rd.
5. $466.56.
6. $93.75.
7. 8.4.
8. $12.32.
1. $1750;
   $1275.
2. 720.
3. 24.
4. $683.60.
5 2200.
6. $40\frac{3}{4}$; $41\frac{17}{18}$.

Page 490.

1. 3343 in.
2. 142 rd. 1 yd.
   8 in.
3. 247 A.
   108 sq. rd.
   24 sq. yd.
   1 sq. ft.
   115.2 sq. in.
4. $132.30.
5. 84.
6. 9 ft.
7. $409.50.
8. $651.24.
1. $48.10;
   $27.75;
   $918.
2. $670;
   $12,800.
3. 5681;
   11,362;
   17,043.
4. $1862.
5. 133.
6. 95.
7. 28,000.
8. 2106.

Page 492.

1. 960.
2. 48,000.
3. 1750.
4. $9750;
   $1875.
5. $217.14.
6. 768.
7. 452,780.
8. $86.93.
9. $64.60.
10. $398.75.
1. $35.72;
   $95.76;
   $999.
2. 3181.
3. 205.278.
4. 864.
5. 30 rd.
6. 623.
7. 8 ft.
8. $129.60.

Page 494.

1. 6213.5.
2. 9.
3. $153.
4. 12,740.
5. 24 in.
6. $1.50.
7. 144.
1. 1.
2. $111.41.
3. 6 ft.
4. 34 ft.
5. 2288.
6. $62\frac{2}{3}$, 67.

Page 496.

1. 6,999,410.
2. 620,136.
3. 6,429,808.
4. 137 rd. 2 ft.
$4\frac{3}{7}$ in.
5. \$4500,
\$1500.
6. 7680.
7. $99\frac{1}{3}$.
8. \$882.
9. 10 in.
10. 4 yd.
1. 6,075,000.
2. 640,814.
3. 5,095,055.
4. 3, 7^3; 2^2, 3^2,
5, 11.
5. \$51.70;
\$159.90;
\$402.32.
6. 18,750.
7. 8 ft.
8. 50 rd.
9. $8\frac{1}{2}$ ft.
10. 203.
11. \$418.

Page 497.

1. 1656; 1728.
2. 1848; 1960.

Page 498.

1. 8,024,144.
2. 809,732.
3. 3,172,653.
4. \$725, \$4800.
5. \$161.20;
\$14;
\$327.75.
6. $10\frac{1}{2}$ ft.
7. \$336.
8. 990.
9. \$12.30.
10. \$630.
1. 62,70,264.
2. 720,384.
3. 9,280,146.
4. 1840 lb.
5. \$221.
6. 384.
7. $8\frac{1}{2}$ ft.
8. \$332.80.
9. \$52.25.
10. 46 A. 94 sq. rd.
9 sq. yd.
6 sq. ft.
32 sq. in.

Page 500.

1. \$17.10;
\$118.30;
\$14.
2. 75,712.
3. 1 mi. 5 fur.
26 rd. 3 yd.
3 in.
4. $133\frac{3}{5}$.
5. 351.
6. 1480 lb.
7. 60.45.
1. £59 2 s.
2. 91 sq. rd.
12 sq. yd.
8 sq. ft.
$97\frac{5}{7}$ sq. in.
3. \$4900.
4. 161 mi.
114 rd.
2 yd. 11 in.
5. \$4320.
6. \$318.75.
7. 11 ft.
8. \$276.25.

Page 502.

1. $25\frac{11}{16}$.
2. $5\frac{23}{32}$.
3. $10\frac{1}{12}$.
4. \$1750; \$957.
5. \$79.20.
6. 495 ft.
7. 2019.94.
8. 1615.95.
9. 91 A.
19 sq. rd.
14 sq. yd.
6 sq. ft.
35 sq. in.
1. $\frac{8}{15}$.
2. $1383\frac{3}{4}$.
3. $2\frac{2}{3}$.
4. 1615.95.
5. 36.
6. 119.7.
7. \$4620.
8. $75\frac{1}{2}$, 74.

Page 504.

1. $29\frac{3}{8}$.
2. $1971\frac{1}{5}$.
3. $6\frac{3}{8}$.
4. \$1560.
5. 2250 lb.
6. $5\frac{3}{5}$.
7. 1750 lb.
8. $159\frac{5}{9}$.
9. \$507.
1. 248 rd. 4 yd.
2 ft. 8 in.
2. \$9900.
3. 5865.3.
4. 1320.
5. 54.
6. 85 bu.
7. 115 mi.
140 rd. 3 yd.
2 ft. 9 in.

Page 506.

1. $86\frac{1}{6}$.
2. $560\frac{1}{4}$.
3. $13\frac{3}{4}$.
4. \$4500;
\$7500.
5. 1 sq. rd.
22 sq. yd.
8 sq. ft.
54 sq. in.
6. 410.45.
7. \$83.16.
8. $24\frac{1}{2}$.
9. 6 ft.
10. \$86.67.
1. $3\frac{1}{12}$.
2. $2529\frac{3}{5}$.
3. $1\frac{1}{2}$.
4. \$32.20;
74.16; \$192.
5. 6480.
6. 12.5 ch.
7. 9′ 10″.
8. 810.
9. \$2.10.
10. 25 A.
18 sq. rd.
1 sq. yd.
105 sq. in.

Page 508.

1. $2\frac{1}{3}$.
2. $4349\frac{1}{7}$.
3. $4\frac{1}{2}$.
4. 1 mi. 70 rd.
5 yd. 2 ft. 8 in.
5. \$134.30;
\$7.80;
\$338.80.
6. 3168.31.
7. \$340.48.
8. 54 ft.
9. 1728.
10. 1260.
1. 182 A.
137 sq. rd.
4 sq. yd.
2 sq. ft.
$128\frac{4}{7}$ sq. in.
2. 24 ft.
3. \$61.69.
4. 24.8 ch.
5. 12 ft.
6. 120.
7. 1 A.
140 sq. rd.
27 sq. yd.
3 sq. ft.
81 sq. in.

Page 510.

1. $9\frac{5}{12}$.
2. $9391\frac{2}{3}$.
3. $5\frac{19}{21}$.
4. \$6500;
\$14,500.
5. 9 rd. 4 yd.
$1\frac{7}{8}$ in.
6. 96.48.
7. 135 ft.
8. 121.61.

9. 418.08.
10. $70.91.
1. $98\frac{73}{160}$.
2. $7718\frac{3}{4}$.
3. $43\frac{23}{40}$.
4. 651.24.
5. 1 mi. 223 rd.
5 yd.
6. 173.66 ;
411.64.
7. 12 ft.
8. $40\frac{5}{6}$; $40\frac{2}{3}$.

Page 512.

1. 225.12.
2. $165.
3. $7475.
4. $179\frac{5}{9}$.
5. 4 A. 21 sq. rd.
22 sq. yd.
3 sq. ft.
128 sq. in.
6. $6318.
7. $126.
1. 274 rd. 1 yd.
1 ft. $8\frac{4}{7}$ in.
2. 2633.4.
3. 111.
4. 4 ft.
5. 1710.
6. $2172.80.
7. 6528 ; 6656.

Page 514.

1. $4.14.
2. $650.
3. $65.82.
4. 7128.
5. 105.16.
6. 44 ft.
7. $136.80.
1. $4\frac{7}{9}$.
2. $64\frac{11}{18}$.
3. $12\frac{7}{12}$.
4. $4500 ;
$7500.
5. $1260.
6. 308.73.
7. $8\frac{1}{2}$ ft.
8. 24.7.

9. 1 mi. 206 rd.
3 yd. 2 ft.
2 in.
10. 18 ft.

Page 516.

1. 22 yr. 3 mo.
14 da.
2. 307.
3. 1389.31.
4. 7 yr. 347 da.
5. $70.72.
6. 60.
7. 2160 lb.
1. 114 rd. 8 yd.
5 ft. $113\frac{1}{7}$ in.
2. 25,249.22
3. 5 yr. 193 da.
4. $576.
5. $10\frac{1}{2}$ ft.
6. 2140 lb.
7. 1560 ; 1632.

Page 518.

1. 586.11.
3. $47.88.
4. $4736.
5. $44.96.
6. 2450 lb.
7. $129.60.
1. $160 ; $8.70 ;
$713.
2. 134.67.
3. 12 ft.
4. $481.25.
5. 420.
6. $32\frac{5}{6}$; $33\frac{1}{6}$.

Page 520.

1. 5 yr. 5 mo.
10 da.
2. 5446.35.
3. 19,360.
4. $234\frac{2}{3}$.
5. $1250 ; $950.
6. 28,400.
7. 8448.
1. 365 A.
114 sq. rd.

8 sq. yd.
5 sq. ft.
$113\frac{1}{7}$ sq. in.
2. $4500 ;
$4800.
3. $102.21.
4. 73 rd.
5. $21.38.
6. 1152.
7. 252.05.
8. $49.50.

Page 522.

1. $10\frac{3}{4}$.
2. $895\frac{1}{5}$.
3. $6\frac{1}{2}$.
4. $8.86 ;
$6.65;
$498.20.
5. 2^4, 7^2 ; 3^2, 5,
13 ; 2^2, 3^2,
7^2.
6. 455.86.
7. $82.13.
8. $880.
9. $567.
10. 544.
1. $950 ; $9600.
2. 173.1.
3. 112 ft.
4. 90.
5. 11 ft.
6. 60.
7. 2952 ; 3096.

Page 524.

1. 5431.39.
2. 194.
3. $48.60.
4. 74.
5. 336.
6. 776.
7. $4800.
1. $28\frac{7}{8}$.
2. $3619\frac{1}{5}$.
3. $12\frac{1}{6}$.
4. 284 rd. 2 yd.
1 ft. 4 in.
5. 8000.008.

6. 1389.31.
7. 121 ft.
8. $106.40.
9. $64.80.
10. 25 mi. 6 rd.
5 yd. 2 ft.
2 in.

Page 526.

1. 24 rd.
2. 255.
3. 9648 sq. ft.
4. $10.64.
5. 765.
6. $11\frac{1}{2}$ ft.
7. 603.
1. $26\frac{1}{6}$.
2. $3\frac{7}{8}$.
3. 21 bu.
4. 179.38.
5. 198 ft.
6. 1952.
7. 67 ; $65\frac{1}{36}$.

Page 528.

1. 7^3 ; 7^2, 11 ;
3, 5, 7, 11.
2. 648.
3. 101.3.
4. $13,320.
5. 120.
6. $247\frac{1}{9}$.
7. $45.63.
1. 71 sq. rd.
3 sq. yd.
3 sq. ft.
36 sq. in.
2. 482.4.
3. 43.5 ch.
4. $341.
5. 1950 lb.
6. $8.64.
7. 666 ; 720.

Page 530.

1. $224.
2. $83.52.
3. 76.

4. 10½ ft.
5. $16.43.
6. $35.40.
7. $432.
1. 2206.17.
2. 136 ft.
3. 22,528.
4. 40.
5. $144.
6. $552.
7. 306.

Page 532.

1. 2 A.
115 sq. rd.
21 sq. yd.
8 sq. ft.
36 sq. in.
2. 222.
3. 364.81.
4. $580.61.
5 27¾.
6. 18 sq. rd.
9 sq. yd.
8 sq. ft.
29 sq. in.
7. 32 rd.
1. 2566.07.
2. 32 rd.
3. 43 rd. 4 yd.
1 ft. 3 in.
4. 8 ft.
5. 9½.
6. $106.88.
7. $68.40.

Page 534.

1. $79.80;
$36.40;
$288.
2. 2695.
3. 926.2.
4. 61¼.
5. $47.50.
6. 85 bu.
7. $2.10.
1. $945; $960.
2. 171.02.
3. 96.
4. 324.
5. 7 ft.
6. 78⅓; 77⅙.

Page 536.

1. 2713.5.
2. $61.03.
3. 3840.
4. $85.80.
5. 258⅔.
6. 16,800.
7. $1265.40.
1. $2500;
$1800.
2. $6.65.
3. $1920.
4. 32 rd.
5. 3796.74.
6. $3.
7. 712½; 750.

Page 538.

1. 3 yr. 7 mo.
20 da.
2. 9640.
3. $86.06.
4. 606.21.
5. $30.58.
6. 7.
7. 120.
1. $12,500;
$2400.
2. 2054.36.
3. $51.60.
4. $24.85.
5. 129 rd. 3 yd.
8 in.
6. 9½ ft.
7. $12,160.

Page 540.

1. 180.
2. 1103.08.
3. 648.
4. $6.25.
5. 20 yd.
6. $207.35.
1. 1.
2. 1728.
3. 90 ft.
4. 1580 41.
5. $5175.
6. 22½ bu.
7. $1725.

Page 542.

1. 19 yr. 5 mo.
22 da.
2. $775.
3. 11½ ft.
4. 13.983.
5. 5386.5.
6. $64.31.
7. $25.03.
1. 30⅚.
2. 27½.
3. 7¼.
4. 1070.12.
5. 26 bu. 2.7 pk.
6. 198 ft.
7. 88⅓; $85\frac{1}{18}$.

Page 544.

1. $89.30; $76;
$174.80.
2. 303.91.
3. $125.19.
4. 282⅔.
5. 59,800.
6. $4752.
7. $6.91.
1. $775;
$12,750.
2. 4594.39.
3. $.36.
4. 990.
5. $288.
6. $616.
7. 2176; 2304.

Page 546.

1. 94.7 in.
2. 32.
3. $72.58.
4. $350; $.98.
5. 2880.
6. 5 ft.
7. 176.
1. $494.
2. 8.5 ch.
3. 18.
4. $112.80.
5. 166.03.
6. $2051.10.
7. 2336.

Page 548.

1. 325.89.
2. 9¼ ft.
3. 186.
4. 3618; 3699
5. $103.40.
6. $364.32.
7. 29⅗; 30½.
8. $92.34.

TABLES

LINEAR MEASURE

12 inches (in.)	= 1 foot	ft.
3 feet	= 1 yard	yd.
5½ yards, or 16½ feet	= 1 rod	rd.
40 rods	= 1 furlong	fur.
320 rods	= 1 mile	mi.

1 mi. = 320 rd. = 1760 yd. = 5280 ft. = 63,360 in.

A *hand*, used in measuring the height of horses, = 4 in. A *knot*, used in measuring distances at sea, = 1.15 mi. A *fathom*, used in measuring the depth of the sea, = 6 ft.

SQUARE MEASURE

144 square inches (sq. in.)	= 1 square foot	sq. ft.
9 square feet	= 1 square yard	sq. yd.
30¼ sq. yd., or 272¼ sq. ft.	= 1 square rod	sq. rd.
160 square rods	= 1 acre	A.
640 acres	= 1 square mile	sq. mi.

1 A. = 160 sq. rd. = 4840 sq. yd. = 43,560 sq. ft.

A Section of land is a square mile.

Roofing, flooring, and slating are often estimated by the *square*, which contains 100 square feet.

SURVEYORS' MEASURE

In measuring land, surveyors use a chain (ch.) which contains 100 links (l.) and is 4 rods long. Since the chain is 4 rods long, a square chain contains 16 sq. rd., and 10 sq. ch. = 160 sq. rd., or 1 acre.

CUBIC MEASURE

1728 cubic inches (cu. in.)	= 1 cubic foot	cu. ft.
27 cubic feet	= 1 cubic yard	cu. yd.
128 cubic feet	= 1 cord	cd.
16 cubic feet	= 1 cord ft.	cd. ft.
8 cord feet	= 1 cord	cd.

NOTE. — In computing the contents of an enclosing wall, masons and brick-layers regard it as one straight wall whose length is the distance around it on the outside. Corners are thus measured twice.

A *perch* of stone or masonry is 16½ ft. long, 1½ ft. thick, and 1 ft. high, and contains 24¾ cu. ft.

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= 1 bushel . . bu.

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nches.

en expressed in barrel
of 63 gallons each. In

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eight . . cwt.
. . . . . T.

rains.

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potatoes. . = 60 lb.
flour . . . = 196 lb.
pork . . . = 200 lb.
ils . . . . = 100 lb.

ight . . pwt.
. . . . . oz.
. . . . . lb.

s.

T

. . dr., or ʒ.
. . oz., or ℥.
. . lb., or ℔.

760 grains.

NEY

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. . . . . . *s.*
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